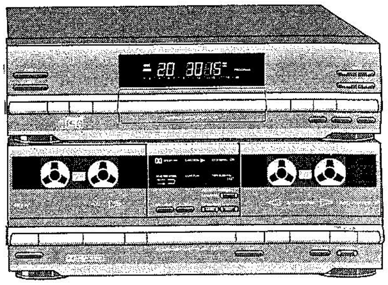
Double Cassette Deck + CD Player CCD310/00

Service
Service
Service



Service Manual

COMPACT
disc
DIGITAL AUDIO

Contents

Specification 2
Connection & Controls 3
Warnings 4
Handling chip components 4

Dismantling of

CD Module 5
Access to Front panels 6
Access to Recorder panels 7
CD Loading 8
CD Trayfront 8
CDM 9 - 10
Service tools 9
Exploded view of CD Module 11 - 12
Mechanical partslist CD 11
Wiring diagram of set 13 - 14

CD Part

Service test program 15
Error code table 15
Startup procedure 16
Block diagram 17 - 18
Fault finding tree 19
Adjustment table 20

Photo Diode Signal Controller

Circuit diagram 21
Component lay out 22

Display

Circuit diagram 23
Component lay out 24

Keyboard

Circuit diagram 25
Component lay out 25

Decoder

Circuit diagram 26 - 28
Component lay out 29 - 31

Servo Control

Circuit diagram 32 - 34
Component lay out 35 - 36

Cassette part

Front part

Circuit diagram 37 - 38
Component lay out 39 - 40

Logic part

Component lay out 41 - 42
Circuit diagram 43 - 44

Analog part

Adjustment table 46
Component lay out 47 - 48
Circuit diagram 49 - 51
Exploded view of set 52 - 53
Mechanical partslist 54
Electrical partslist 55 - 62

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

CLASS 1
LASER PRODUCT
3122 110 03420

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4822 725 23286

PHILIPS

CS 35 960

Specification

General:

Mains voltage : no internal mains transformer

Power consumption : 10W in dubbing
: 6W in stand by

Ext. Supply (from FR310) : +14V stab.
: +12V unstab.
: -12V unstab.
: 4,1V AC on -20V for FTD
: -25V for FTD

Recorder part:

Tape speed : 4,76 cm/s ±2% in **Normal Speed**
: 9,06 cm/s ±10% in **High Speed**
Wow & Flutter : ≤0,2%
Winding speed : 110 s ±15 s for C60 cassette
Noise reduction system : Dolby B (Noise Reduction factor: 7 dB typ.)
Erase / Bias system : AC 80 kHz
RIF-shift : service solution on request
Distortion at 220 nWb/m : ≤ 3%
Channel difference at PB : ≤ 3 dB
Channel difference overall : ≤ 3 dB
Channel separation : ≤ 22 dB at 1 kHz
Track separation : ≤ 59 dB at 1 kHz

	IEC I	IEC II	Dubbing NS	Dubbing HS
Frequency response -5 dB [1]	60 Hz - 12 kHz	60 Hz - 12 kHz	60 Hz - 12 kHz	60 Hz - 12 kHz
Signal to Noise ratio [2]	≥ 51 dB	≥ 54 dB	≥ 51 dB / ≥ 54 dB	≥ 49 dB / ≥ 52 dB
Signal to Hum ratio [2]	≥ 43 dB	≥ 46 dB	≥ 43 dB / ≥ 46 dB	≥ 43 dB / ≥ 46 dB
Erase attenuation	≥ 60 dB	≥ 60 dB	≥ 60 dB	≥ 60 dB

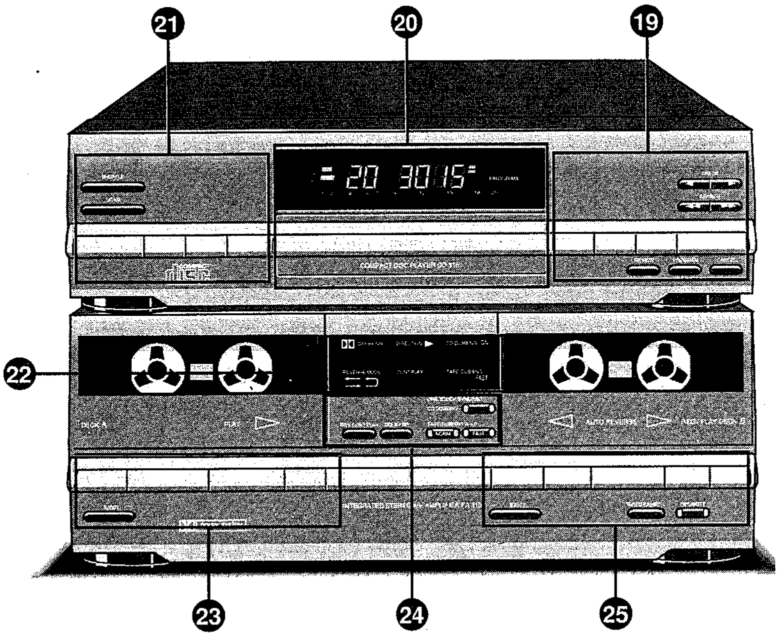
[1] typical value

[2] at 250 nWb/m

CD part:

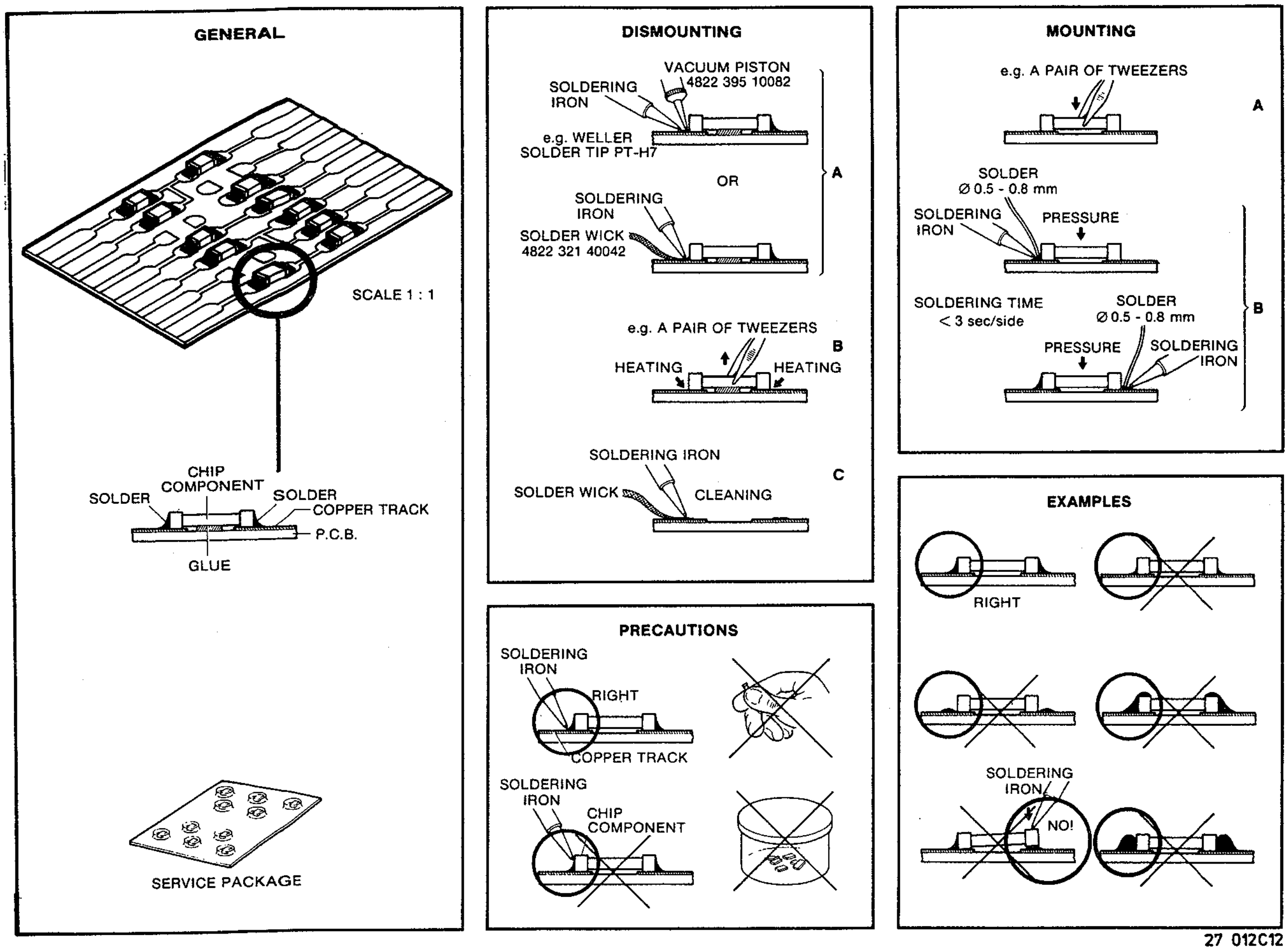
Frequency response : 20 - 18.000 Hz ±1 dB
Output level : 2V ±3 dB
Output impedance : 470Ω
Signal/noise ratio : ≥90 dB
Distortion : ≤0,5% at 1 kHz
Channel difference : ≤ 1,2 dB at 1 kHz
Channel crosstalk : ≥80 dB at 1 kHz
De emphasis : 0 or 15/50 µs switched automatically by subcode on the disc

Connections & Controls



19)	CD Buttons	Track reverse	1972
		Track forwards	1970
		Search reverse	1978
		Search forwards	1975
		Open/Close	1980
		Pause	1977
		Stop	1976
		Play/Replay	1979
		Review	1971
		Program	1974
		Cancel	1973
20)	Fluorescent Tube Display	(FTD)	1989
21)	Special features	Shuffle	1982
		Auto scan	1984
		Repeat all	1986
		Repeat A-B	1981
		Adv. edit	1983
		Tape length	1985
23)	Deck A	Rewind	1451
		Stop	1452
		Play	1453
		Wind	1454

24)	Cass. Function buttons	Reverse mode	1465
		Dolby	1464
		Dubbing NS	1463
		Dubbing HS	1462
		Dubbing CD	1466
	Cass. Function LEDs	Dolby	6470
		Direction standard	6466
		Direction reverse	6467
		Rec	6461
		CD Dubbing	6460
		Reverse mode	6463
			6468
			6469
		Cont. play	6464
		Tape Dubbing NS	6465
		Tape Dubbing HS	6462
25)	Deck B	Rewind	1455
		Stop	1456
		Play	1457
		Direction	1458
		Wind	1459
		Pause	1460
		Rec mute	1461


GENERAL
SCALE 1 : 1
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE
DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER SOLDER TIP PT-H7
OR
SOLDERING IRON
SOLDER WICK
4822 321 40042
A
e.g. A PAIR OF TWEEZERS
B
HEATING
HEATING
SOLDERING IRON
C
SOLDER WICK
CLEANING
PRECAUTIONS
SOLDERING IRON
RIGHT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT
MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
Ø 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
< 3 sec/side
SOLDER
Ø 0.5 - 0.8 mm
B
PRESSURE
SOLDERING IRON
EXAMPLES
RIGHT
SOLDERING IRON
NO!

27 012C12

(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

ESD

(NL) WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD).
Unsorgfältige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern.
Sorgen sie dafür, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

(NL)

Veiligheidsbepalingen vereisen dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen identiek aan de gespecificeerde worden toegepast

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles specifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden für Reparaturen sind Original-Ersatzteile zu verwenden

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambiago identici a quelli specificati.

(SF) Varo!

Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Alä katso säteeseen.

(S) Varning!

Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad.
Betrakta ej strålen.

Dismantling of CD - Module

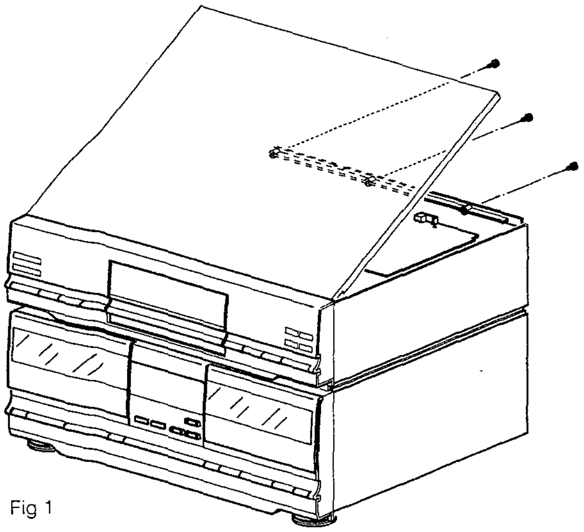


Fig 1

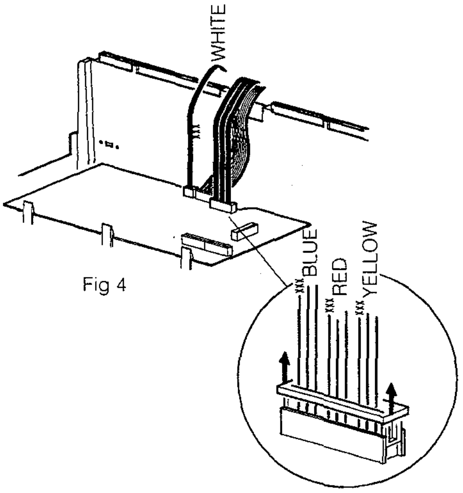


Fig 4

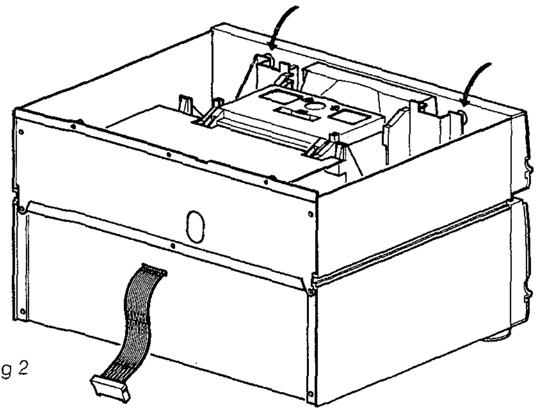


Fig 2

1) Loosen 3x Torx 10 screws (see figure 1).
2) Remove top (see figure 1).
3) Loosen connector of 11 pol. wire on CD-panel (see figure 2). Wire 2x fixed.
4) Loosen 2x Torx 10 screws CD-Module/Front. (see figure 2)
5) Loosen 5x Torx 10 screws on back side.
6) Remove CD-Module as shown in figure 3.
7) If necessary open wire trap connector and remove wires. (see figure 4)

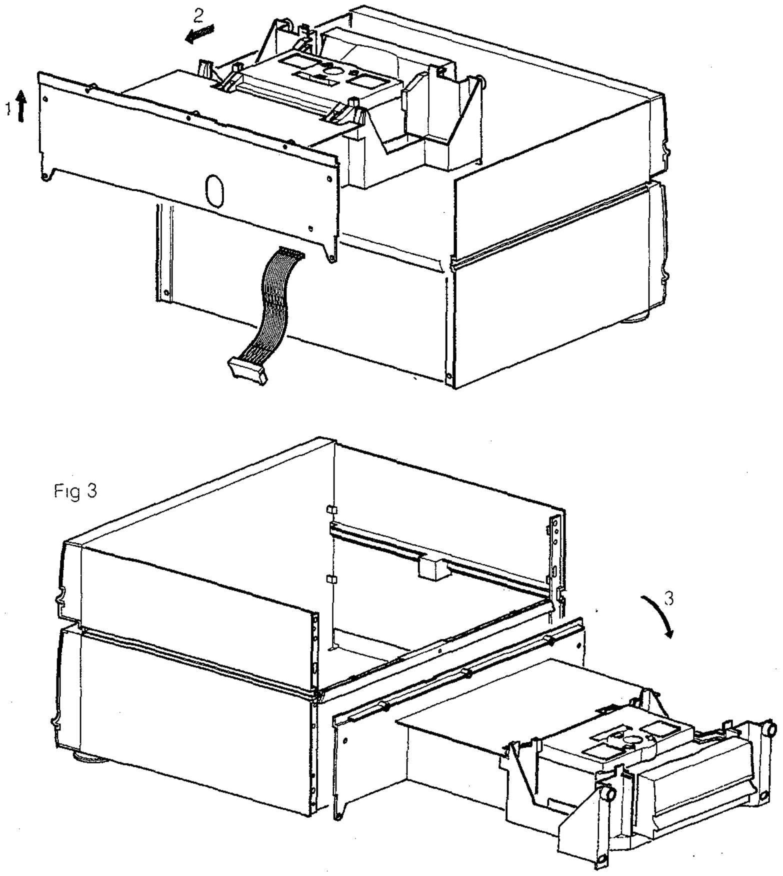


Fig 3

I VA 01230
T19 104

Access to Tape Transports and Led panel

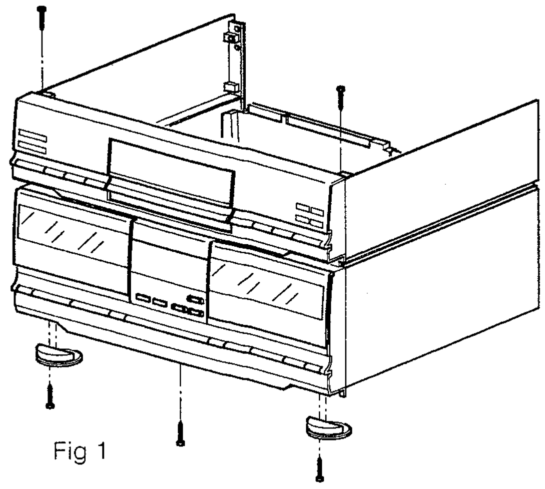


Fig 1

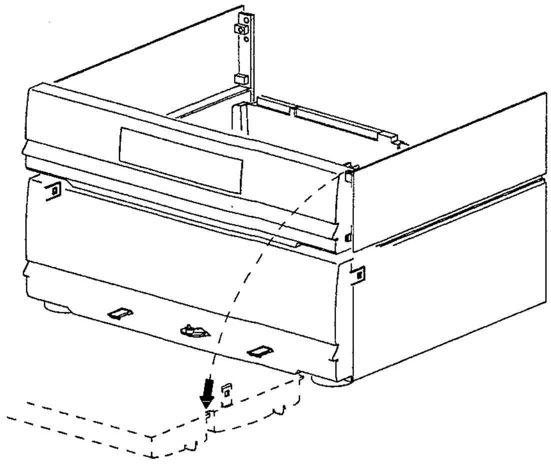


Fig 2

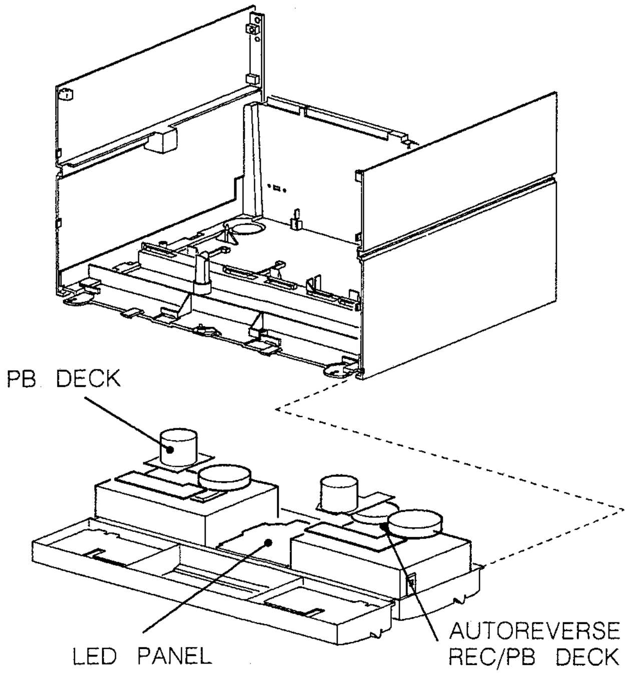

PB DECK
LED PANEL
AUTOREVERSE
REC/PB DECK

Fig 3

EVA 01234
T05-104

After dismantling of CD-Module:

1) Loosen 2x Torx 10 Front / Side panels (see figure 1).
2) Loosen 3x Torx 10 on bottom (see figure 1).
3) Loosen 2x snaps on side panels (see figure 2).
4) Loosen 3x snaps on bottom (see figure 2).
5) Loosen wires from wire holder.
6) Access to tape transports see figure 3.

Access to Dolby Logic panel

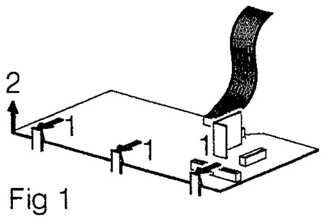


Fig 1

After dismantling of CD-Module:

1) Loosen 3x snaps (see figure 1).
2) Remove wires from wire holder.
3) Service position for measurements on the solder side of the panel. (see figure 2)

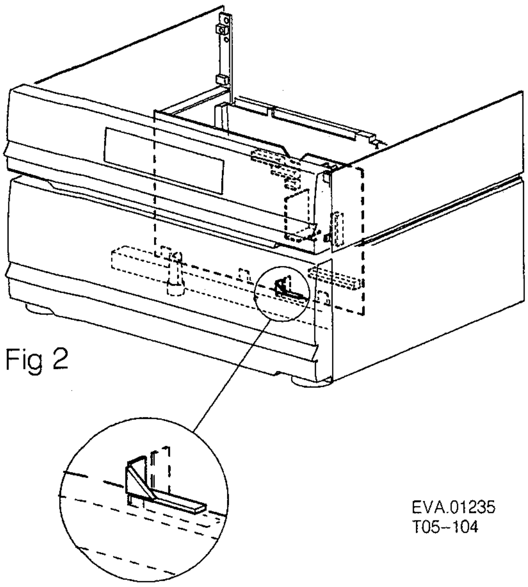
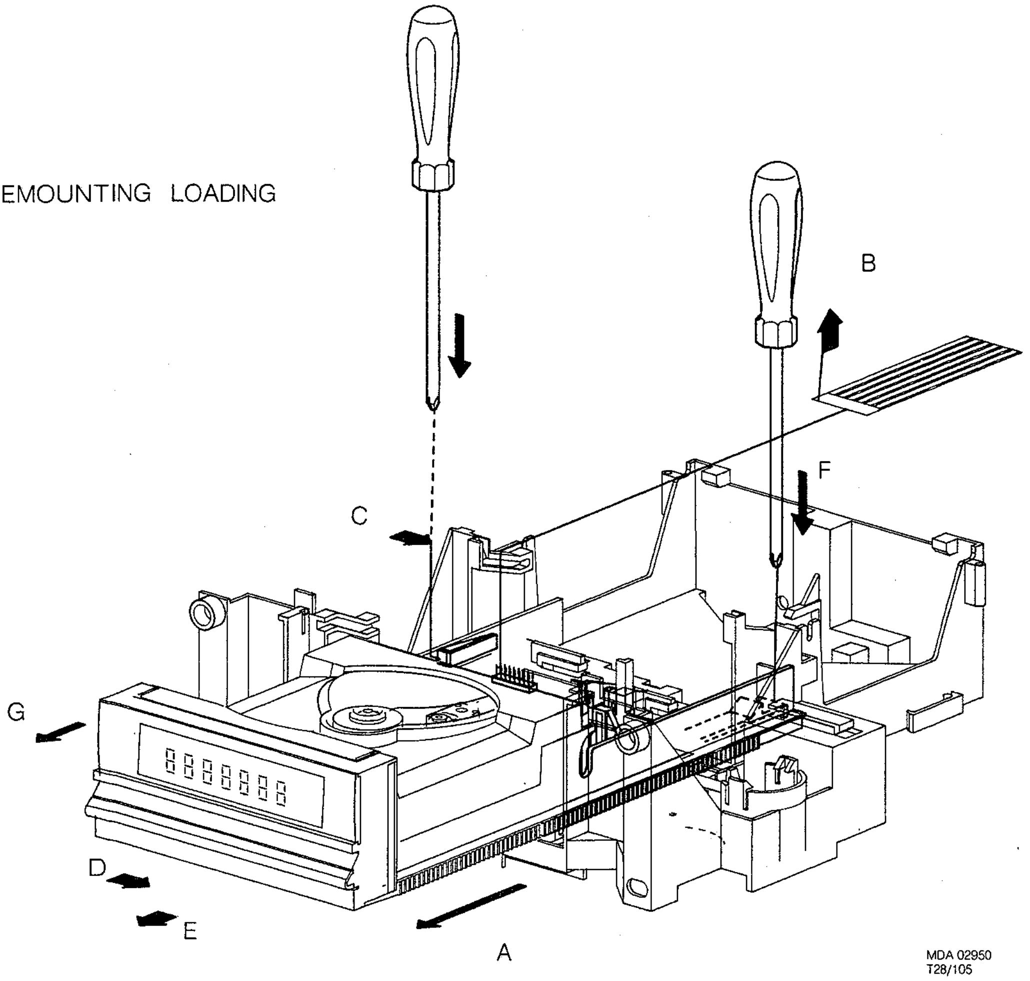


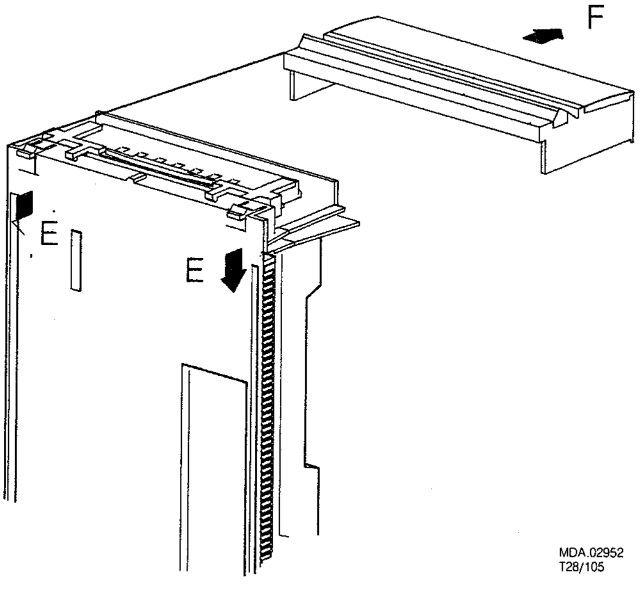
Fig 2

EVA.01235
T05–104

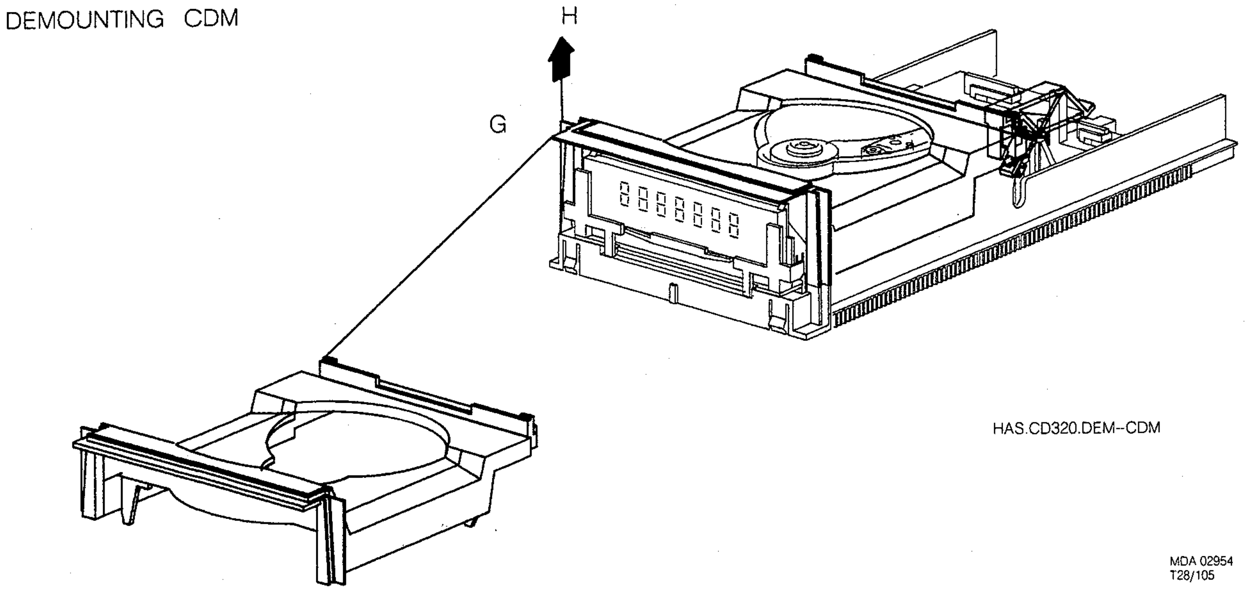
DEMOUNTING LOADING


B
F
C
G
D
E
A
MDA 02950
T28/105

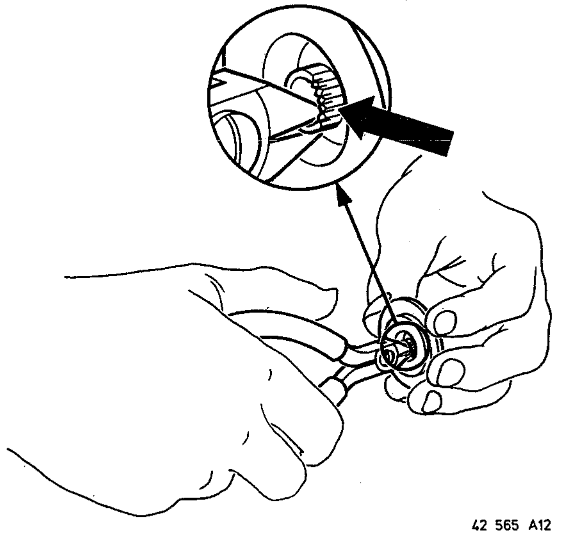
DEMOUNTING TRAYFRONT


F
E
E
MDA.02952
T28/105

DEMOUNTING CDM

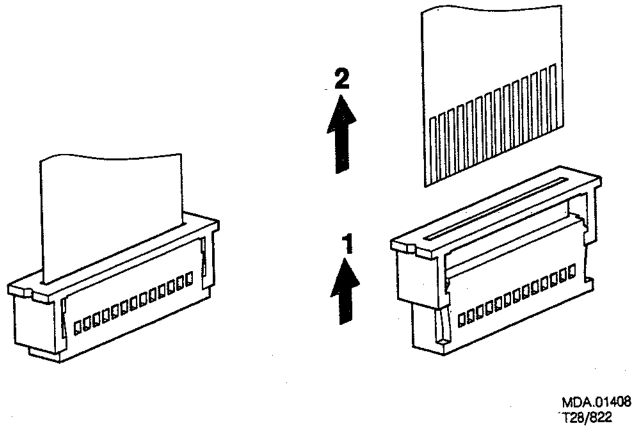

H
G
HAS.CD320.DEM-CDM
MDA 02954
T28/105

SERVICE DISC HOLDDOWN

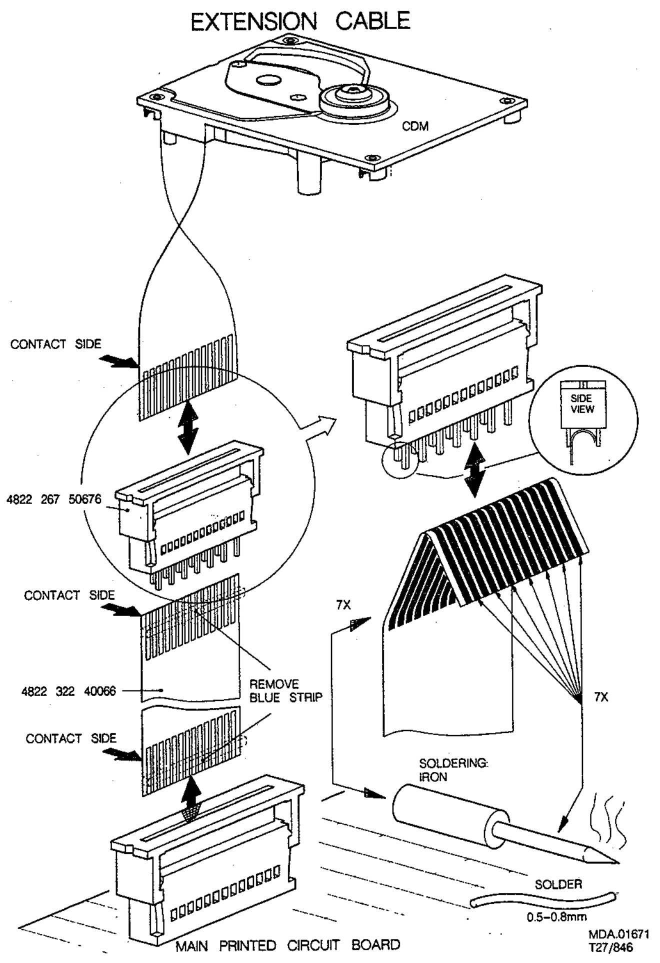


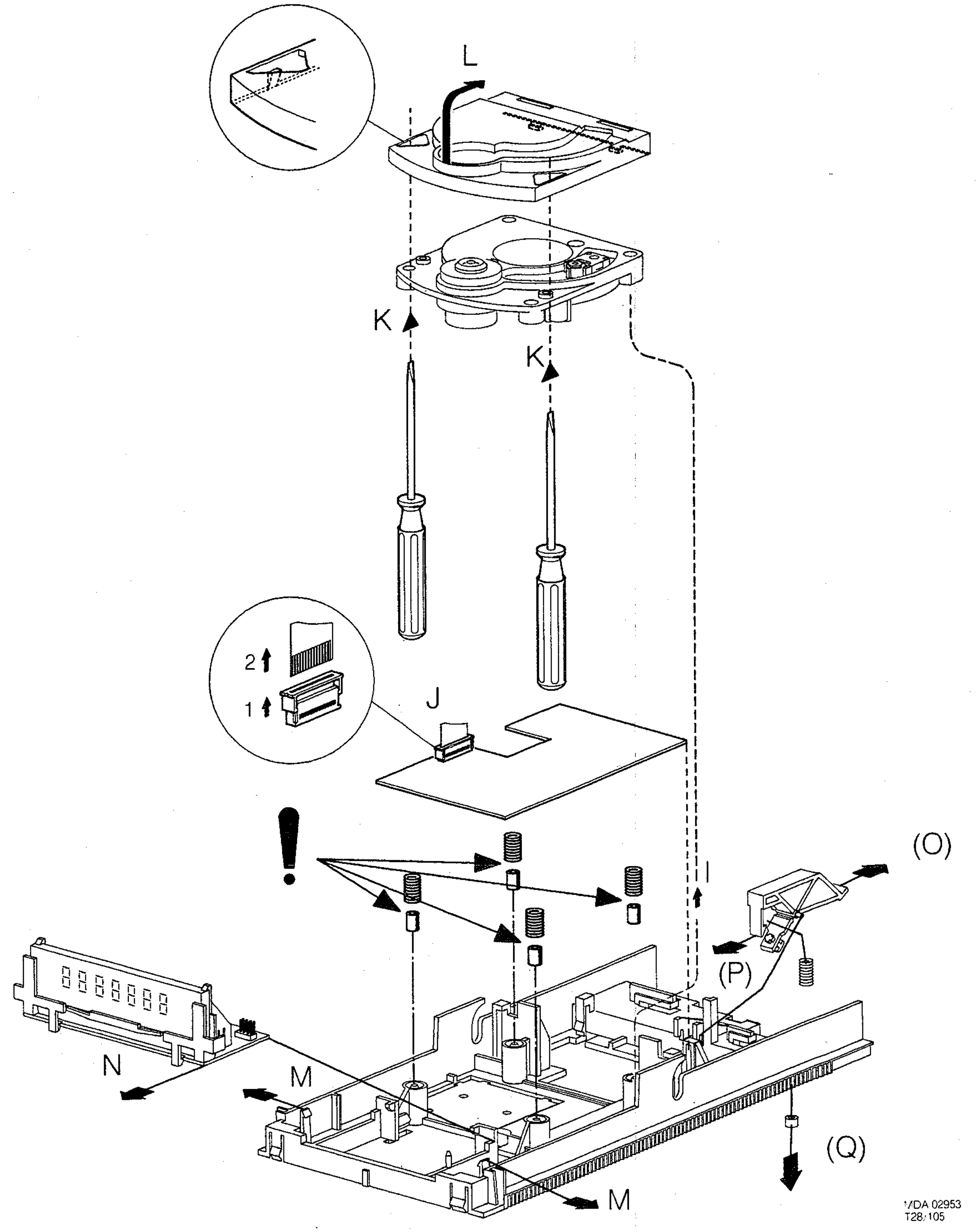
Compose a service Disc hold-down in the following way

- Cut in the most inner ring of a disc hold-down (4822 462 50383) with small and sharp nippers, see fig. above.
- Enlarge the diameter of the innermost ring slightly with the hind part of a pencil or ballpoint, so that it jams onto the turntable with sufficient force.
- If the jamming force decreases after certain time of use, the diameter has to be enlarged with a pencil or ballpoint again.


2
1
MDA.01408
T28/822

SERVICE FOIL FOR CDM

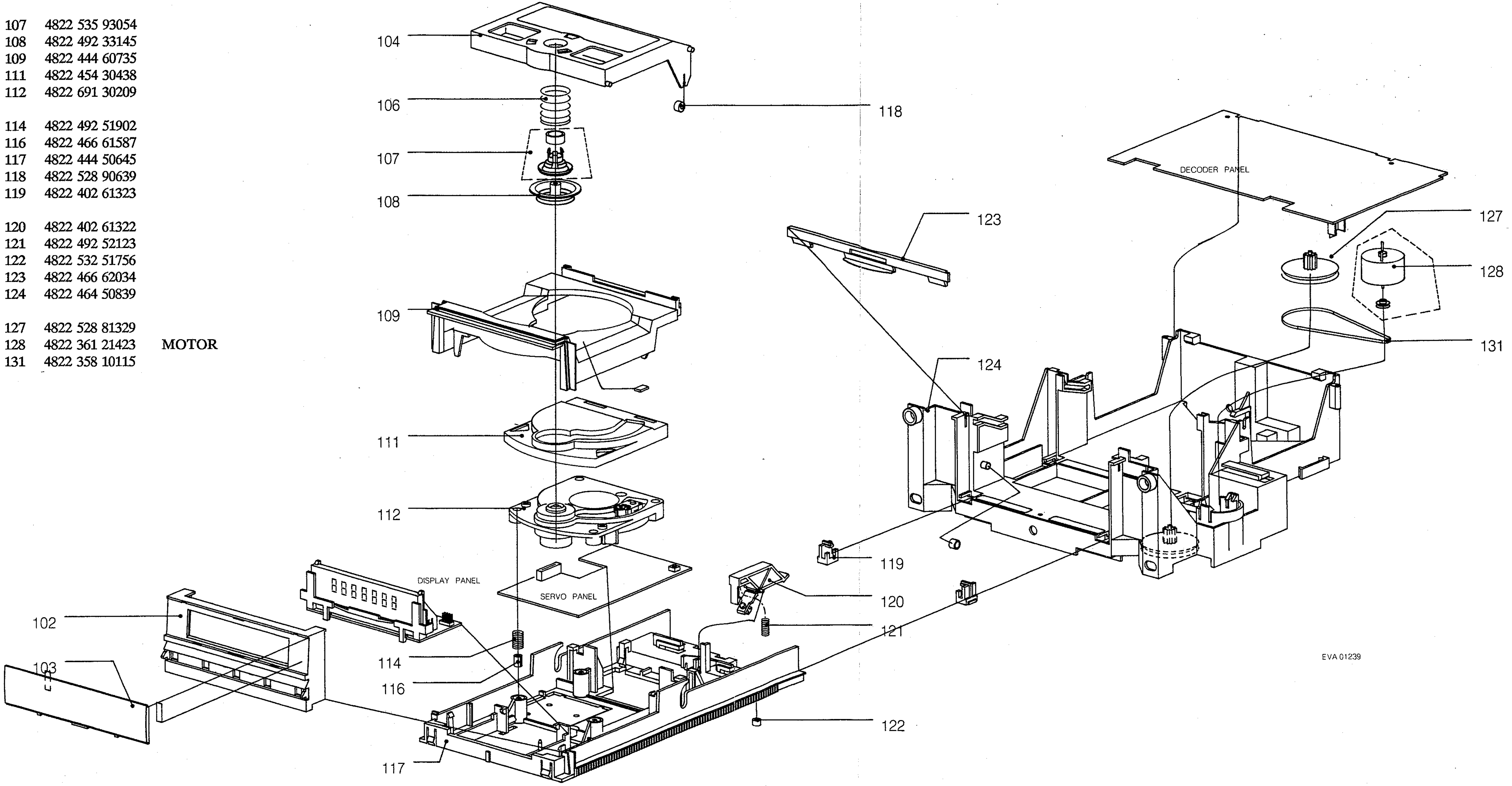

EXTENSION CABLE
CDM
CONTACT SIDE
4822 267 50676
CONTACT SIDE
4822 322 40066
REMOVE BLUE STRIP
CONTACT SIDE
7X
SIDE VIEW
7X
SOLDERING IRON
SOLDER
0.5-0.8mm
MAIN PRINTED CIRCUIT BOARD
MDA.01671
T27/846


L
K
K
2
1
J
I
(O)
(P)
N
M
M
(Q)
/DA 02953
T28/105

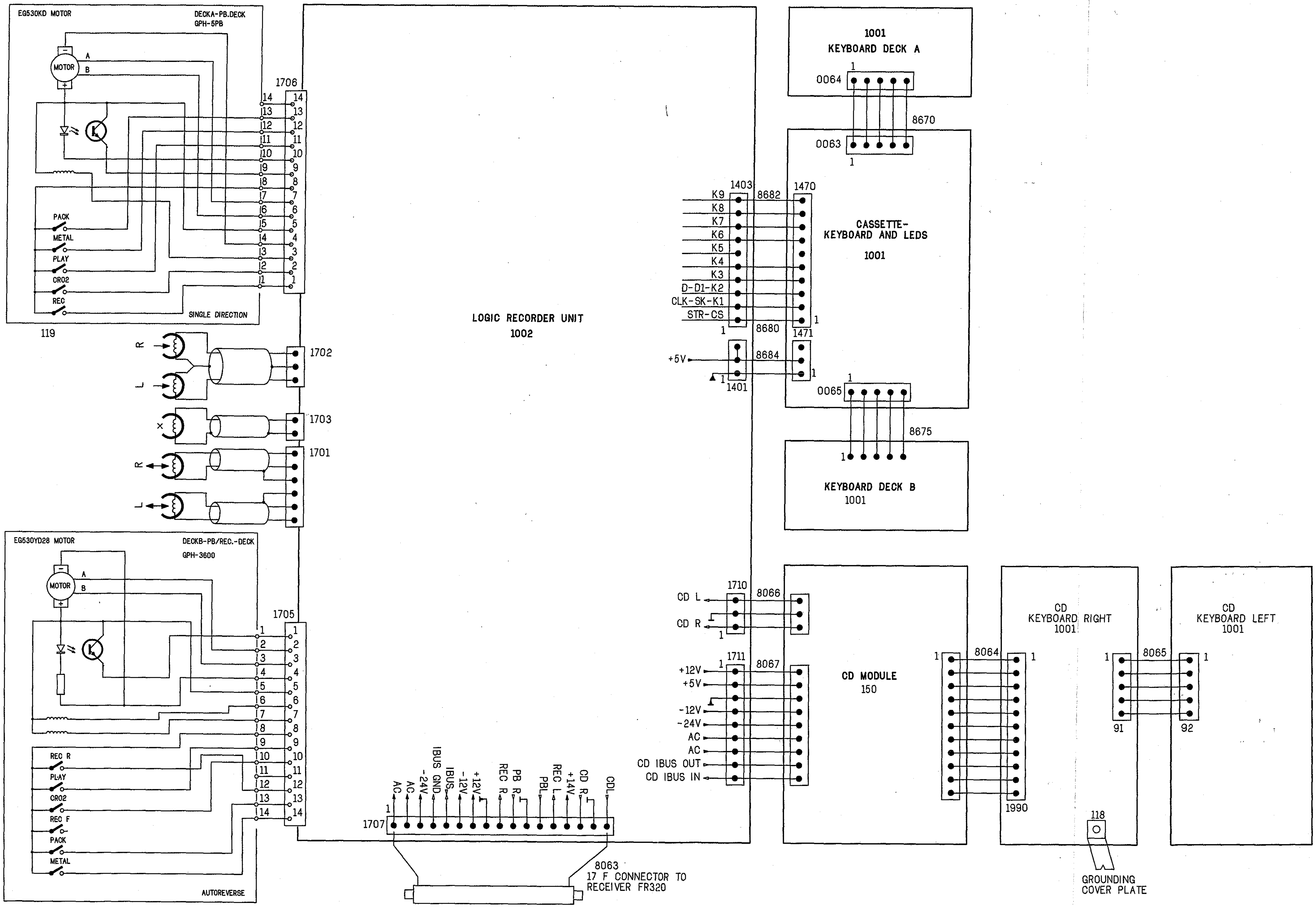
Exploded view of CD-Module

Mechanical partslist of CD-Module

	4822 256 91764	Display holder
102	4822 444 60734	
103	4822 444 40437	
104	4822 466 92841	
106	4822 492 52159	
107	4822 535 93054	
108	4822 492 33145	
109	4822 444 60735	
111	4822 454 30438	
112	4822 691 30209	
114	4822 492 51902	
116	4822 466 61587	
117	4822 444 50645	
118	4822 528 90639	
119	4822 402 61323	
120	4822 402 61322	
121	4822 492 52123	
122	4822 532 51756	
123	4822 466 62034	
124	4822 464 50839	
127	4822 528 81329	
128	4822 361 21423	MOTOR
131	4822 358 10115	

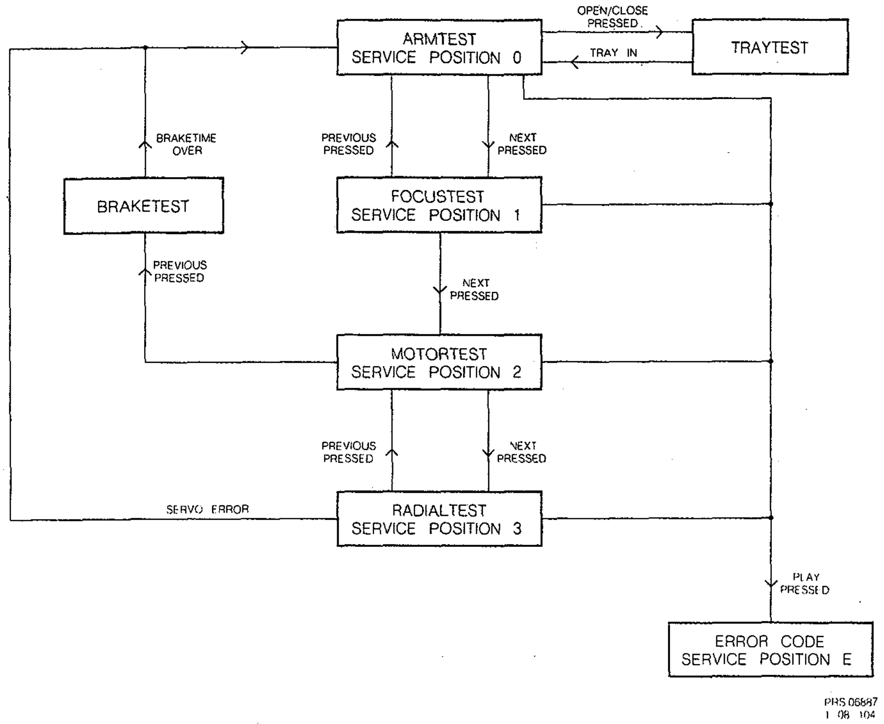

104
106
107
108
109
111
112
DISPLAY PANEL
SERVO PANEL
102
103
114
116
117
118
DECODER PANEL
123
127
128
131
124
119
120
121
122
EVA 01239

Wiring diagram of set


EG530KD MOTOR
DECKA-PB.DECK
GPH-5PB
MOTOR
A
B
1706
PACK
METAL
PLAY
CR02
REC
SINGLE DIRECTION
119
R
L
1702
X
1703
R
L
1701
EG530YD28 MOTOR
DECKB-PB/REC.-DECK
GPH-3600
MOTOR
A
B
1705
REC R
PLAY
CR02
REC F
PACK
METAL
AUTOREVERSE
120
LOGIC RECORDER UNIT
1002
1707
AC
AC
-24V
IBUS GND
IBUS
-12V
+12V
REC R
PB R
PBL
REC L
+14V
CD R
CDL
8063
17 F CONNECTOR TO
RECEIVER FR320
1001
KEYBOARD DECK A
0064
8670
0063
1403
8682
1470
K9
K8
K7
K6
K5
K4
K3
D-D1-K2
CLK-SK-K1
STR-CS
8680
1471
CASSETTE-
KEYBOARD AND LEDS
1001
+5V
8684
1401
0065
8675
KEYBOARD DECK B
1001
1710
8066
CD L
CD R
1711
8067
+12V
+5V
-12V
-24V
AC
AC
CD IBUS OUT
CD IBUS IN
CD MODULE
150
8064
1990
CD
KEYBOARD RIGHT
1001
8065
91
92
CD
KEYBOARD LEFT
1001
118
GROUNDING
COVER PLATE

SERVICE TEST PROGRAM

To get into **Service Test Program** press **NEXT** and **PLAY** together while switching **POWER ON**.


OPEN/CLOSE PRESSED
ARMTEST SERVICE POSITION 0
TRAYTEST
TRAY IN
BRAKETIME OVER
PREVIOUS PRESSED
NEXT PRESSED
BRAKETEST
FOCUSTEST SERVICE POSITION 1
PREVIOUS PRESSED
NEXT PRESSED
MOTORTEST SERVICE POSITION 2
PREVIOUS PRESSED
NEXT PRESSED
SERVO ERROR
RADIALTEST SERVICE POSITION 3
PLAY PRESSED
ERROR CODE SERVICE POSITION E
PRS 06887
1 08 104

ERROR CODE TABLE

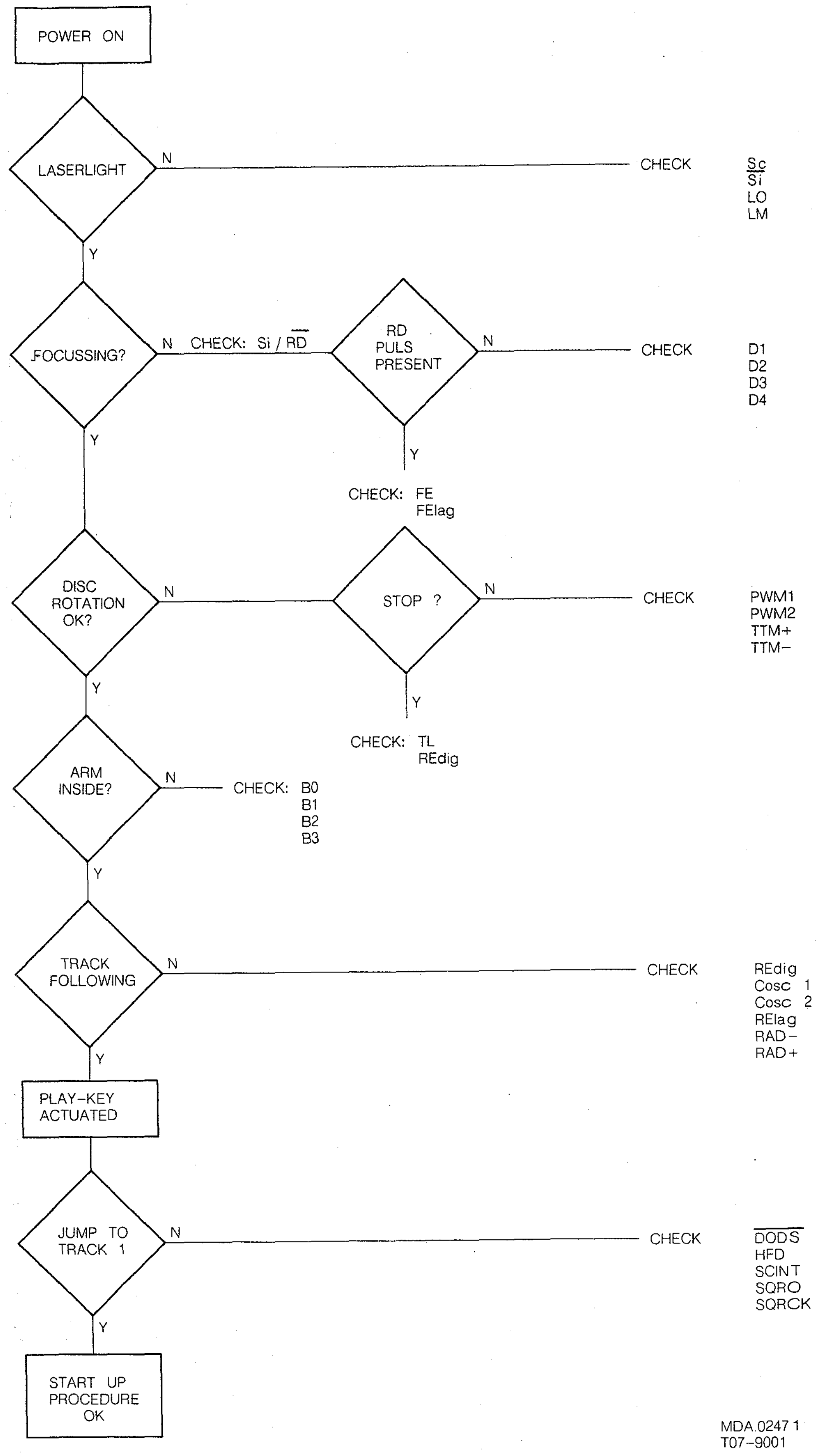
SYSTEM ERRORS

ERROR 01	Tray error
ERROR 02	Focus error
ERROR 03	Radial error
Disc errors:	
ERROR 04	DRD becomes not low
ERROR 05	TL low too long
ERROR 06	Jump error
ERROR 07	Subcode error
ERROR 08	TOC error

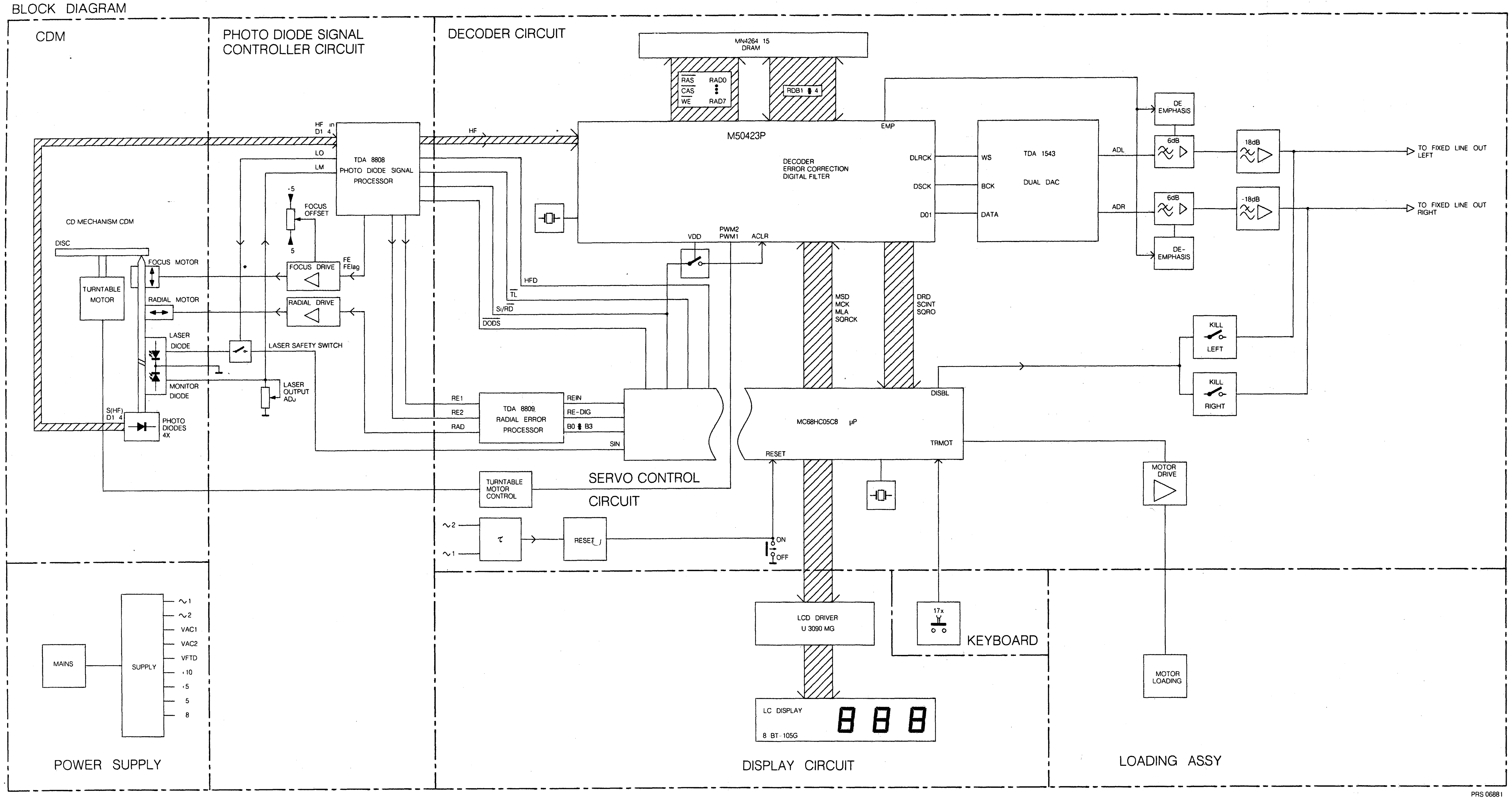
OPERATING ERRORS

ERROR 31	Search time out error
ERROR 32	Binary search time out error
ERROR 33	Index not found
ERROR 34	Relative time not found
ERROR 35	Next/Prev when scanning
ERROR 36	Programmed track is not existing on this disc
ERROR 37	Selected track is not existing on this disc
ERROR 38	Next at a border when repeat is off
ERROR 39	Previous at a border when repeat is off
ERROR 40	Finding error
ERROR 41	Review error
ERROR 42	Program memory full
ERROR 43	Program pressed while playing
ERROR 44	Cancel pressed while not in review
ERROR 45	Program pressed while no track selected
ERROR 46	Program pressed while scanning program
ERROR 47	A-B pressed while not in play
ERROR 48	A-B pressed in scan
ERROR 49	Search pressed in scan
ERROR 50	Edit pressed in play mode
ERROR 51	No track possible to play in edit mode
ERROR 52	Tape pressed while not in time input mode
ERROR 53	Not allowed key pressed in CD-dubbing
ERROR 54	Not allowed key pressed in edit-play/pause
ERROR 55	Not allowed key pressed in edit time input
ERROR 56	Not allowed key pressed in stand by
ERROR 57	Fast forward pressed while not in play
ERROR 58	Fast reverse pressed while not in play
ERROR 59	EOT received while playing edit

START UP PROCEDURE


POWER ON
LASERLIGHT
N
CHECK
Sc
Si
LO
LM
Y
FOCUSSING?
N
CHECK: Si / RD
RD PULS PRESENT
N
CHECK
D1
D2
D3
D4
Y
Y
CHECK: FE
FElag
DISC ROTATION OK?
N
STOP ?
N
CHECK
PWM1
PWM2
TTM+
TTM−
Y
Y
CHECK: TL
REdig
ARM INSIDE?
N
CHECK: B0
B1
B2
B3
Y
TRACK FOLLOWING
N
CHECK
REdig
Cosc 1
Cosc 2
RElag
RAD−
RAD+
Y
PLAY-KEY ACTUATED
JUMP TO TRACK 1
N
CHECK
DODS
HFD
SCINT
SQRO
SQRCK
Y
START UP PROCEDURE OK
MDA.0247 1
T07-9001

BLOCK DIAGRAM

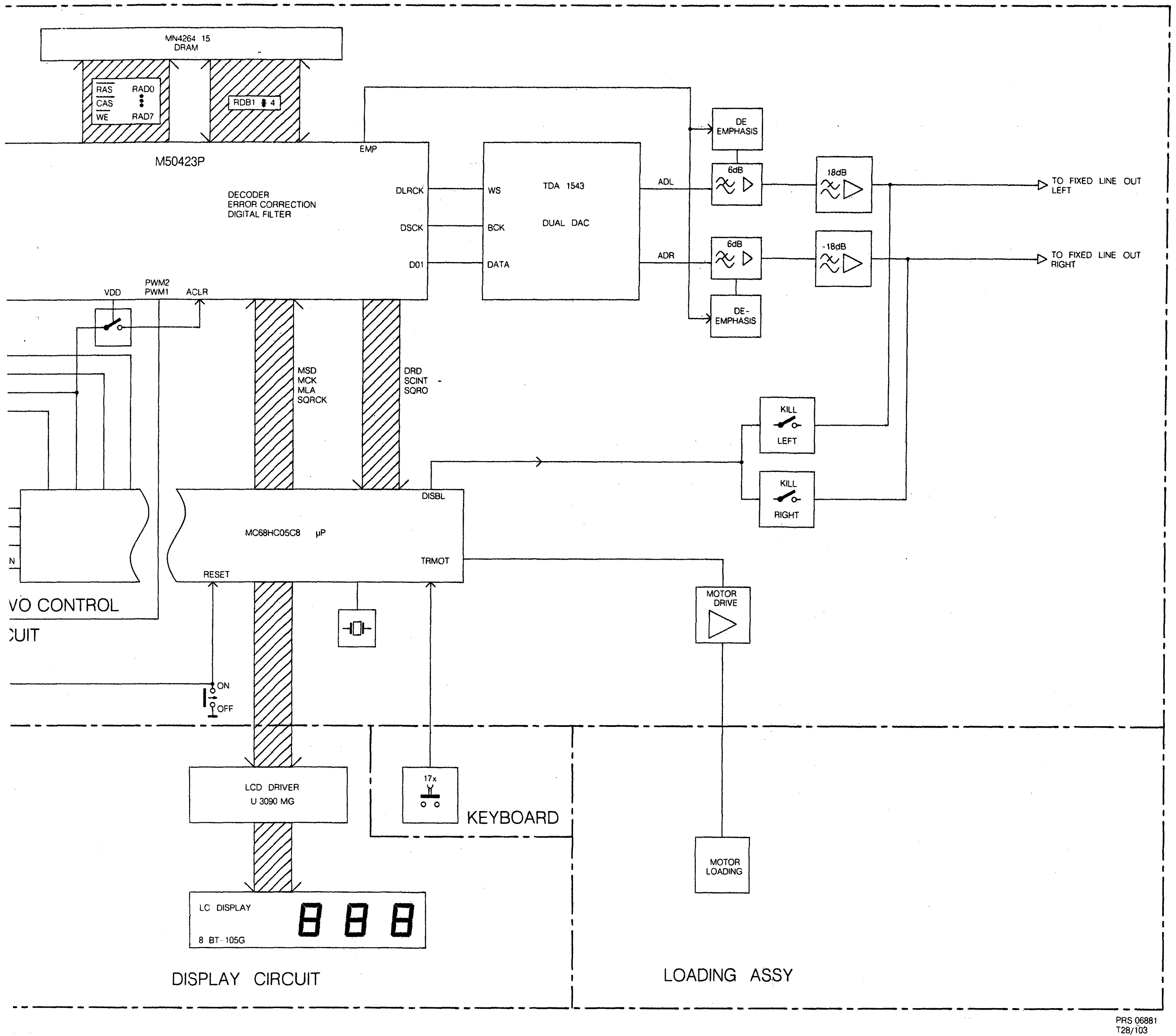

CDM
PHOTO DIODE SIGNAL CONTROLLER CIRCUIT
DECODER CIRCUIT
CD MECHANISM CDM
DISC
TURNTABLE MOTOR
FOCUS MOTOR
RADIAL MOTOR
LASER DIODE
MONITOR DIODE
S(HF) D1 4
PHOTO DIODES 4X
HF in D1 4
LO
LM
TDA 8808 PHOTO DIODE SIGNAL PROCESSOR
-5
FOCUS OFFSET
5
FOCUS DRIVE
FE FElag
RADIAL DRIVE
LASER SAFETY SWITCH
LASER OUTPUT ADJ
MN4264 15 DRAM
RAS
CAS
WE
RAD0
RAD7
RDB1 4
HF
M50423P
DECODER ERROR CORRECTION DIGITAL FILTER
EMP
DLRCK
DSCK
D01
VDD
PWM2 PWM1
ACLR
HFD
TL
Si/RD
DODS
MSD MCK MLA SQRCK
DRD SCINT SQRO
RE1
RE2
RAD
TDA 8809 RADIAL ERROR PROCESSOR
REIN
RE-DIG
B0 B3
SIN
MC68HC05C8 µP
DISBL
TRMOT
RESET
TURNTABLE MOTOR CONTROL
SERVO CONTROL CIRCUIT
∿2
∿1
τ
RESET
ON
OFF
WS
BCK
DATA
TDA 1543 DUAL DAC
ADL
ADR
DE EMPHASIS
6dB
18dB
-18dB
DE-EMPHASIS
TO FIXED LINE OUT LEFT
TO FIXED LINE OUT RIGHT
KILL LEFT
KILL RIGHT
MOTOR DRIVE
MAINS
SUPPLY
∿1
∿2
VAC1
VAC2
VFTD
+10
-5
5
8
POWER SUPPLY
LCD DRIVER U 3090 MG
17x
KEYBOARD
LC DISPLAY
8 BT-105G
888
DISPLAY CIRCUIT
MOTOR LOADING
LOADING ASSY

PRS 06881
T28/103

ACLR - µP interface register clear input
AGC - Automatic gain control
AOL-R - Analogue output left-right
B0-B3 - Control bits for radial circuit
BCK - Bit clock input
BEQ - Equalizer reference current input
BGC - DC and LF gain control reference input
BPA-C - Display backplane A-C
C16M1 - ½ divider input
CAS - Column address strobe signal input
Cosc1 - Capacitor wobble oscillator
Cosc2 - Capacitor wobble oscillator
CS - Chip select
D1-D4 - Photodiode currents
DASEL1-4 - DAC interface format select
DATA - Data input
DEC - Decoupling input internal bypass
DET - HF detector voltage input
DI - Serial data input
DISBL - Display blank
DISCLK - Display clock
DISDAT - Display data
DISENA-B - Disenable A-B
DIV4 - Divide by 4 input
DLRCK - Left/right channel clock
DO1 - Dual DAC Rch serial data output
DOBSEL - Data bit select
DODS - Drop out detector suppression
DRD - 8/12 cm Disc detection
DSCK - Data shift clock to DAC
EFFK - EFM frame clock output
EMP - Emphasis flag output
EST2 - Error status 2
FE - Focus error signal
FE lag - Focus error signal for LAG network
FS - Focus starting current
GCHF - Gain control input of HF amplifier
GCLF - Gain control input for AC and LF amplifiers
HF - HF output for DEMOD
HF-out - HF amplifier and equalizer voltage output
HFD - HF detector output for DEMOD
IREF - Current reference
KBSC0-5 - Keyboard scanning 0-5
LM - Laser monitor diode input
LO - Laser amplifier current output
LPF - PLL loop filter
MCK - µP interface shift clock input
MLA - µP interface data latch clock input
MSD - µP interface serial data input
PLLH - PLL on hold output
PWM - Disc motor driving output (pulse width modulation)
RAD - Radial drive input
RAD0-7 - Address output
RADout - Output of RE_2-RE_1 input
RAS - Row address strobe signal output
RDB1-4 - Data input/output
RE dig - Radial error digital
RE - Radial error signal (Amplified RE_2-RE_1 currents)
RE1 - Radial error signal 1 (summation of amplified currents D3 and D4)
RE2 - Radial error signal 2 (summation of amplified currents D3 and D2)
REin - Radial error input
RElag - Radial error for LAG network
Rosc - Resistor wobble oscillator
Rwob - Wobble generator input
SA1-SC4 - 12 multiplexed outputs
Sc - Starting up capacitor input
SCCK - Shift clock input for serial subcode data output
SCINT - Interrupt output of subcode Q
SCOE1 - Enable input of subcode T
Si/RD - On/off control for laser supply and focus circuit. Ready signal, Starting up procedure successful.
SIN - Tray switch
SK - Serial clock input
SQRCK - Subcode Q register
SQRO - Subcode Q register output
TEST1 - Test control input
TL - Track loss output signal
TLC - Output from slice level control
TTM - Control voltage for turntable motor
Vext+ - Supply connection
Vext- - Supply connection
VLCD - Supply liquid crystal display
WE - Write enable output
WS - Word select input
XI - Crystal oscillator input
XO - Crystal oscillator output

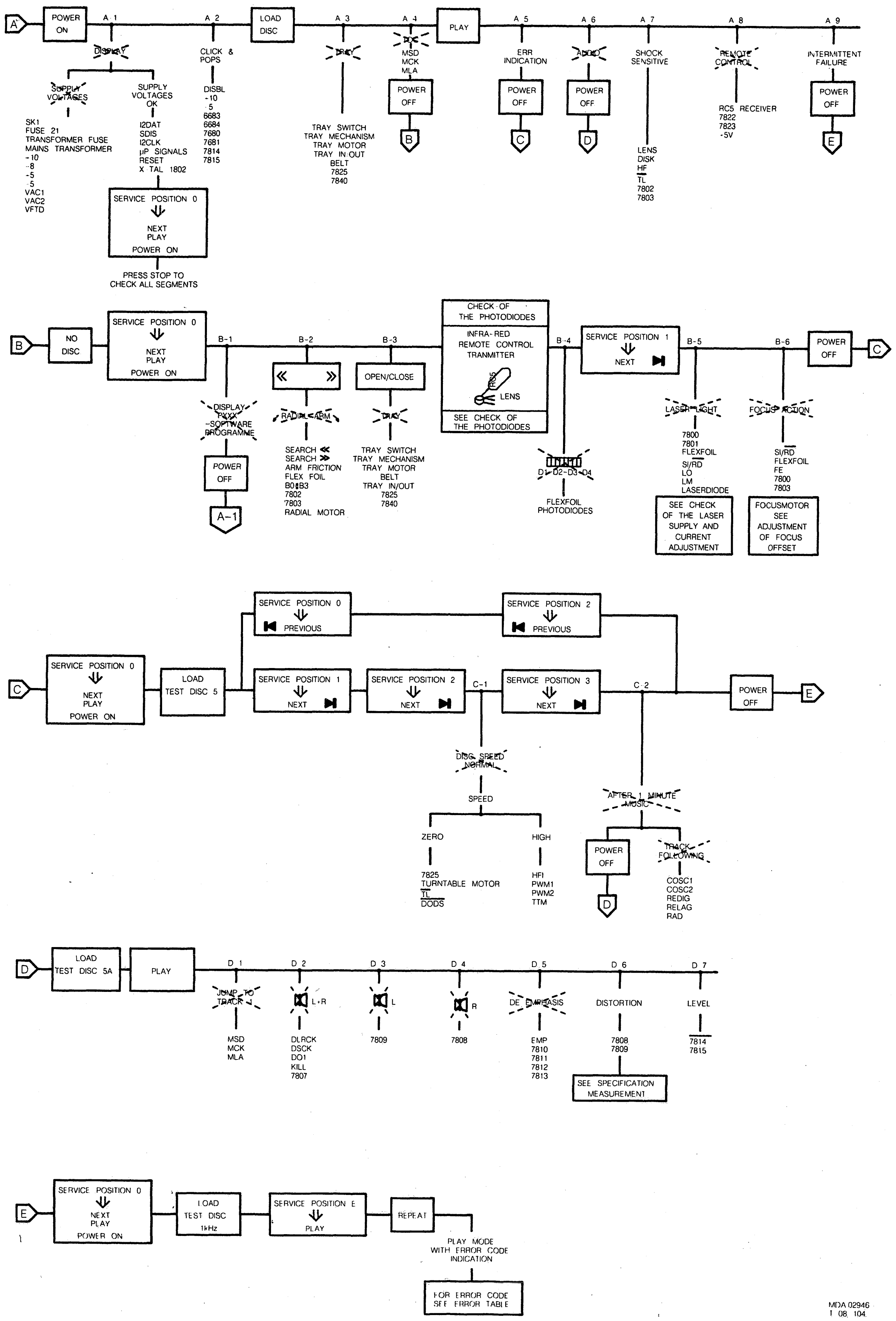
FAUL

A
PO
O
SK1
FUSE 21
TRANSFO
MAINS T
-10
-8
-5
5
VAC1
VAC2
VFTD
B
C
SE
D
T
E


MN4264 15
DRAM
RAS
CAS
WE
RAD0
RAD7
RDB1 4
M50423P
EMP
DECODER
ERROR CORRECTION
DIGITAL FILTER
DLRCK
DSCK
D01
WS
BCK
DATA
TDA 1543
DUAL DAC
ADL
ADR
DE EMPHASIS
6dB
18dB
-18dB
DE-EMPHASIS
TO FIXED LINE OUT LEFT
TO FIXED LINE OUT RIGHT
VDD
PWM2
PWM1
ACLR
MSD
MCK
MLA
SQRCK
DRD
SCINT
SQRO
KILL
LEFT
KILL
RIGHT
DISBL
MC68HC05C8 µP
RESET
TRMOT
MOTOR DRIVE
N
VO CONTROL
CUIT
ON
OFF
LCD DRIVER
U 3090 MG
17x
KEYBOARD
MOTOR LOADING
LC DISPLAY
8 BT 105G
888
DISPLAY CIRCUIT
LOADING ASSY
PRS 06881
T28/103

HF	-	HF output for DEMOD
HF-out	-	HF amplifier and equalizer voltage output
HFD	-	HF detector output for DEMOD
IREF	-	Current reference
KBSC0-5	-	Keyboard scanning 0-5
LM	-	Laser monitor diode input
LO	-	Laser amplifier current output
LPF	-	PLL loop filter
MCK	-	µP interface shift clock input
MLA	-	µP interface data latch clock input
MSD	-	µP interface serial data input
PLLH	-	PLL on hold output
PWM	-	Disc motor driving output (pulse width modulation)
RAD	-	Radial drive input
RAD0-7	-	Address output
RADout	-	Output of RE$_2$-RE$_1$ input
RAS	-	Row address strobe signal output
RDB1-4	-	Data input/output
RE dig	-	Radial error digital
RE	-	Radial error signal (Amplified RE$_2$-RE$_1$ currents)
RE1	-	Radial error signal 1 (summation of amplified currents D3 and D4)
RE2	-	Radial error signal 2 (summation of amplified currents D3 and D2)
REin	-	Radial error input
RElag	-	Radial error for LAG network
Rosc	-	Resistor wobble oscillator
Rwob	-	Wobble generator input
SA1-SC4	-	12 multiplexed outputs
Sc	-	Starting up capacitor input
SCCK	-	Shift clock input for serial subcode data output
SCINT	-	Interrupt output of subcode Q
SCOE1	-	Enable input of subcode T
Si/RD	-	On/off control for laser supply and focus circuit. Ready signal, Starting up procedure successful.
SIN	-	Tray switch
SK	-	Serial clock input
SQRCK	-	Subcode Q register
SQRO	-	Subcode Q register output
TEST1	-	Test control input
TL	-	Track loss output signal
TLC	-	Output from slice level control
TTM	-	Control voltage for turntable motor
Vext+	-	Supply connection
Vext-	-	Supply connection
VLCD	-	Supply liquid crystal display
WE	-	Write enable output
WS	-	Word select input
XI	-	Crystal oscillator input
XO	-	Crystal oscillator output

FAULT FINDING TREE


A
POWER ON
A 1
DISPLAY
SUPPLY VOLTAGES
SK1
FUSE 21
TRANSFORMER FUSE
MAINS TRANSFORMER
-10
-8
-5
5
VAC1
VAC2
VFTD
SUPPLY VOLTAGES OK
I2DAT
SDIS
I2CLK
µP SIGNALS
RESET
X TAL 1802
SERVICE POSITION 0
NEXT
PLAY
POWER ON
PRESS STOP TO CHECK ALL SEGMENTS
A 2
CLICK & POPS
DISBL
-10
5
6683
6684
7680
7681
7814
7815
LOAD DISC
A 3
TRAY
TRAY SWITCH
TRAY MECHANISM
TRAY MOTOR
TRAY IN OUT
BELT
7825
7840
A 4
DOC
MSD
MCK
MLA
POWER OFF
B
PLAY
A 5
ERR INDICATION
POWER OFF
C
A 6
AUDIO
POWER OFF
D
A 7
SHOCK SENSITIVE
LENS
DISK
HF
TL
7802
7803
A 8
REMOTE CONTROL
RC5 RECEIVER
7822
7823
-5V
A 9
INTERMITTENT FAILURE
POWER OFF
E
B
NO DISC
SERVICE POSITION 0
NEXT
PLAY
POWER ON
B-1
DISPLAY PXXX -SOFTWARE PROGRAMME
POWER OFF
A-1
B-2
« »
RADIAL ARM
SEARCH «
SEARCH »
ARM FRICTION
FLEX FOIL
B0‡B3
7802
7803
RADIAL MOTOR
B-3
OPEN/CLOSE
TRAY
TRAY SWITCH
TRAY MECHANISM
TRAY MOTOR
BELT
TRAY IN/OUT
7825
7840
CHECK OF THE PHOTODIODES
INFRA-RED REMOTE CONTROL TRANMITTER
RC5
LENS
SEE CHECK OF THE PHOTODIODES
B-4
D1 D2 D3 D4
FLEXFOIL PHOTODIODES
SERVICE POSITION 1
NEXT
B-5
LASER LIGHT
7800
7801
FLEXFOIL
SI/RD
LO
LM
LASERDIODE
SEE CHECK OF THE LASER SUPPLY AND CURRENT ADJUSTMENT
B-6
FOCUS ACTION
SI/RD
FLEXFOIL
FE
7800
7803
FOCUSMOTOR SEE ADJUSTMENT OF FOCUS OFFSET
POWER OFF
C
C
SERVICE POSITION 0
NEXT
PLAY
POWER ON
LOAD TEST DISC 5
SERVICE POSITION 0
PREVIOUS
SERVICE POSITION 2
PREVIOUS
SERVICE POSITION 1
NEXT
SERVICE POSITION 2
NEXT
C-1
DISC SPEED NORMAL
SPEED
ZERO
7825
TURNTABLE MOTOR
TL
DODS
HIGH
HFI
PWM1
PWM2
TTM
SERVICE POSITION 3
NEXT
C 2
AFTER 1 MINUTE MUSIC
POWER OFF
D
TRACK FOLLOWING
COSC1
COSC2
REDIG
RELAG
RAD
POWER OFF
E
D
LOAD TEST DISC 5A
PLAY
D 1
JUMP TO TRACK 1
MSD
MCK
MLA
D 2
L+R
DLRCK
DSCK
DO1
KILL
7807
D 3
L
7809
D 4
R
7808
D 5
DE EMPHASIS
EMP
7810
7811
7812
7813
D 6
DISTORTION
7808
7809
SEE SPECIFICATION MEASUREMENT
D 7
LEVEL
7814
7815
E
SERVICE POSITION 0
NEXT
PLAY
POWER ON
LOAD TEST DISC 1kHz
SERVICE POSITION E
PLAY
REPEAT
PLAY MODE WITH ERROR CODE INDICATION
FOR ERROR CODE SEE ERROR TABLE
MDA 02946
T 08 104

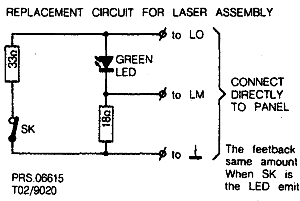
B-3 CHECK OF THE PHOTODIODES

Step	Signal	Mode	◇	Ø	▭	⊡	Remarks
1	D2	power on	◇4—⊡—⊥	–	–	signal 4=6=7=8	Signal depends on Distance lens ↔ IR LED of remote control
	D1		◇6—⊡—⊥				
	D3		◇7—⊡—⊥				
	D4		◇8—⊡—⊥				

T-23286A

B-4 CHECK OF LASER SUPPLY

The laser, the lasersupply plus the monitor diode form a feedback system.
A defect in the lasersupply may result in the destruction of the laser. If, in that case, the laser is replaced, (= complete C.D.M.-unit) the new laser will also become defective. However, it is impossible to check and repair a feedback system if a link is missing. For this reason the laser supply can be checked with teh replacement circuit for laser assembly.

Step	Signal	Mode	◇	▭	Remarks
1	LO	serv. pos. 2 SK /	◇9—Ⓥ—⊥	1.8<V <2.3	REPLACEMENT CIRCUIT FOR LASER ASSEMBLY  CONNECT DIRECTLY TO PANEL The feedback system sees to it that the same amount of current flows through the LED. When SK is open and when SK is closed the LED emits little light. PRS.06615 T02/9020
	LM		◇11—Ⓥ—⊥	170<mV <220	
2	LO	serv. pos. 2 SK ─	◇9—Ⓥ—⊥	1.8<V <2.3	
	LM		◇11—Ⓥ—⊥	170<mV <220	
3	LO	Power on	◇9—Ⓥ—⊥	0V ± 0.2V	No light

T-23286B

B-4 LASER CURRENT ADJUSTMENT

Step	Signal	Mode	◇	Ø	▭	⊡	Remarks
1	–	Power off	–	–	–	–	Check if FLEX-FOIL is properly connected
2	–	Power off	◇11—(Ω)—⊥	R3893	1kΩ $^{+10\%}_{-0}$	–	Pre-adjustment Ohmic value
3	–	Power off	–	R3823	–	–	Set to mid-position
4	laser current ≙ voltage across R3800	Test disc 5A play	◇1—Ⓥ—◇2 mV DC	–	⩾ 15mV	–	If < 15mV then go to step 3 and set R3893 to 1/4 or 3/4. Try again.
5	laser current ≙ voltage across R3800	Test disc 5A play	◇1—Ⓥ—◇2 mV DC	R3893	50mV	–	–
6	FE-LAG	Test disc 5A track 1 play	◇—Ⓥ—⊥	R3823	400mV	–	Fine adjustment

T-23286C

B-5
ADJUSTMENT OF FOCUS-OFFSET

Step	Signal	Mode	◇	Ø	▭	⊡	Remarks
1	–	Power on no disc	–	R3823	–	–	adjust for optical mid-position of the focus motor
2	FE LAG	Play Test disc 5 Track 1	27	R3823	400mV ± 40 mV DC	–	fine adjustment

T-23286D

Photo Diode Signal Controller

SK3	L3	2803	D4	2811	D8	2817	N6	2832	A10	3805	C9	3812	J3	3819	M9	3835	B8	3893	J4
1001	I1	2806	D5	2812	H9	2818	L7	2833	L8	3806	D8	3814	I3	3820	M8	3836	B9	4812	E9
1002	J1	2807	D6	2813	D7	2819	N9	2834	M8	3807	D5	3815	M7	3821	L9	3837	B10	4813	L7
1003	J1	2808	F9	2814	K2	2820	M9	3800	D3	3808	L6	3816	M7	3822	M9	3838	B8	4814	M7
2800	E2	2809	D9	2815	K3	2830	G10	3801	E3	3810	K3	3817	L7	3823	N8	3839	L8	6800	B9
2801	E3	2810	D6	2816	J3	2831	B9	3804	D7	3811	K3	3818	N9	3824	N7	3840	M8	6801	B9

6850	L3
7800	I6
7801	J3
7803	A8
7803	L8

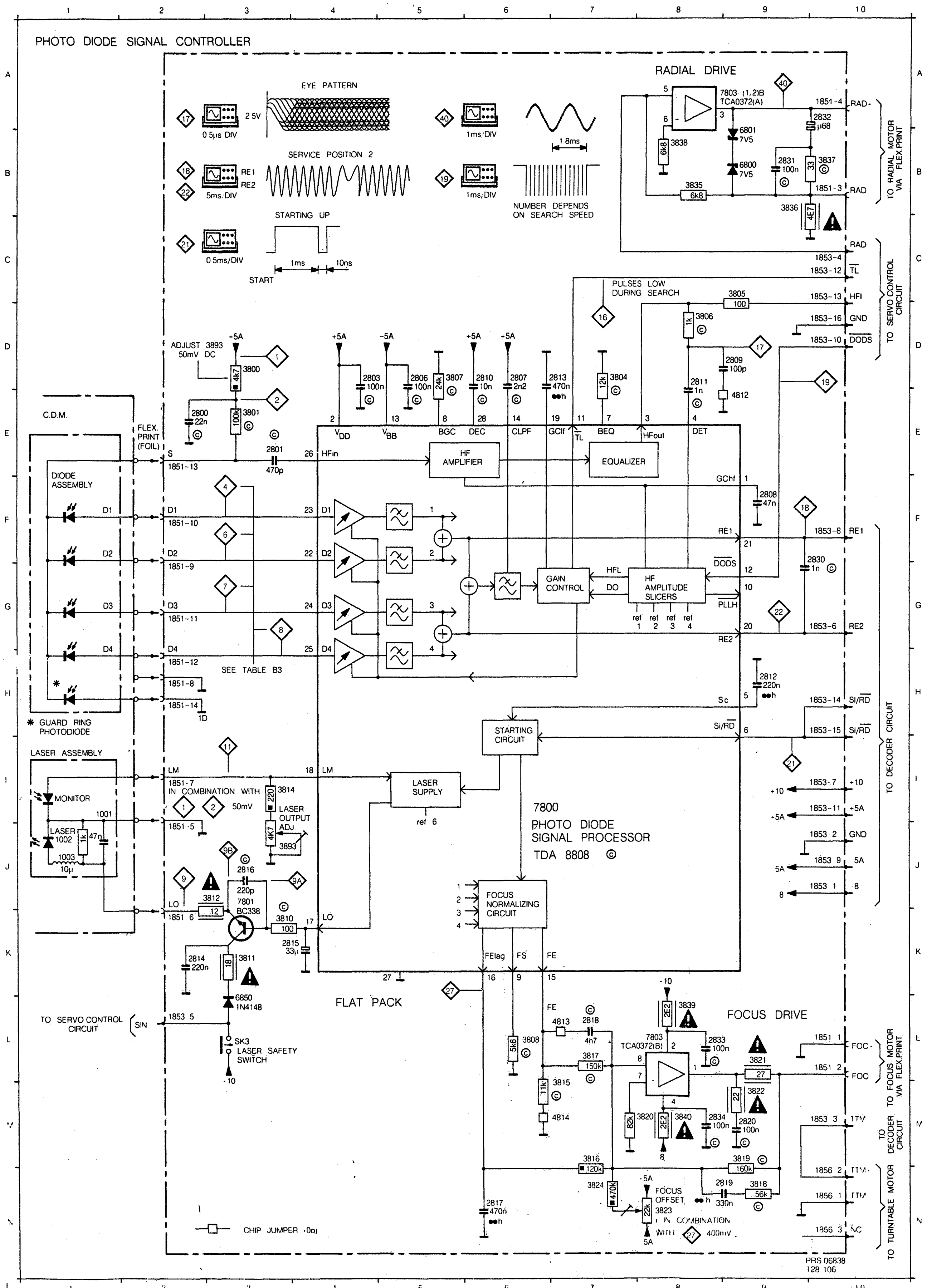


PHOTO DIODE SIGNAL CONTROLLER
RADIAL DRIVE
7803 (1,2)B TCA0372(A)
EYE PATTERN
SERVICE POSITION 2
STARTING UP
START
NUMBER DEPENDS ON SEARCH SPEED
PULSES LOW DURING SEARCH
TO RADIAL MOTOR VIA FLEX PRINT
TO SERVO CONTROL CIRCUIT
TO DECODER CIRCUIT
ADJUST 3893 50mV DC
C.D.M.
DIODE ASSEMBLY
FLEX PRINT (FOIL)
SEE TABLE B3
GUARD RING PHOTODIODE
LASER ASSEMBLY
MONITOR
LASER
HF AMPLIFIER
EQUALIZER
GAIN CONTROL
HF AMPLITUDE SLICERS
STARTING CIRCUIT
LASER SUPPLY
7800 PHOTO DIODE SIGNAL PROCESSOR TDA 8808
FOCUS NORMALIZING CIRCUIT
FLAT PACK
IN COMBINATION WITH 50mV
LASER OUTPUT ADJ.
TO SERVO CONTROL CIRCUIT
SK3 LASER SAFETY SWITCH
CHIP JUMPER
FOCUS DRIVE
7803 TCA0372(B)
FOCUS OFFSET
IN COMBINATION WITH 27 400mV
TO FOCUS MOTOR VIA FLEX PRINT
TO DECODER CIRCUIT
TO TURNTABLE MOTOR
PRS 06838 128 106

s ↔

T-23286A

lete
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hat the
ough the LED
is closed

T-23286B

EX-FOIL

nent
e

position

then go
nd set
/4 or
ain.

insert

T-23286C

optical
on of
motor

tment

T-23286D

Photo Diode Signal Controller

SK3	L3	2803	D4	2811	D8	2817	N6	2832	A10	3805	C9	3812	J3	3819	M9	3835	B8	3893	J4	6850	L3
1001	I1	2806	D5	2812	H9	2818	L7	2833	L8	3806	D8	3814	I3	3820	M8	3836	B9	4812	E9	7800	I6
1002	J1	2807	D6	2813	D7	2819	N9	2834	M8	3807	D5	3815	M7	3821	L9	3837	B10	4813	L7	7801	J3
1003	J1	2808	F9	2814	K2	2820	M9	3800	D3	3808	L6	3816	M7	3822	M9	3838	B8	4814	M7	7803	A8
2800	E2	2809	D9	2815	K3	2830	G10	3801	E3	3810	K3	3817	L7	3823	N8	3839	L8	6800	B9	7803	L8
2801	E3	2810	D6	2816	J3	2831	B9	3804	D7	3811	K3	3818	N9	3824	N7	3840	M8	6801	B9		

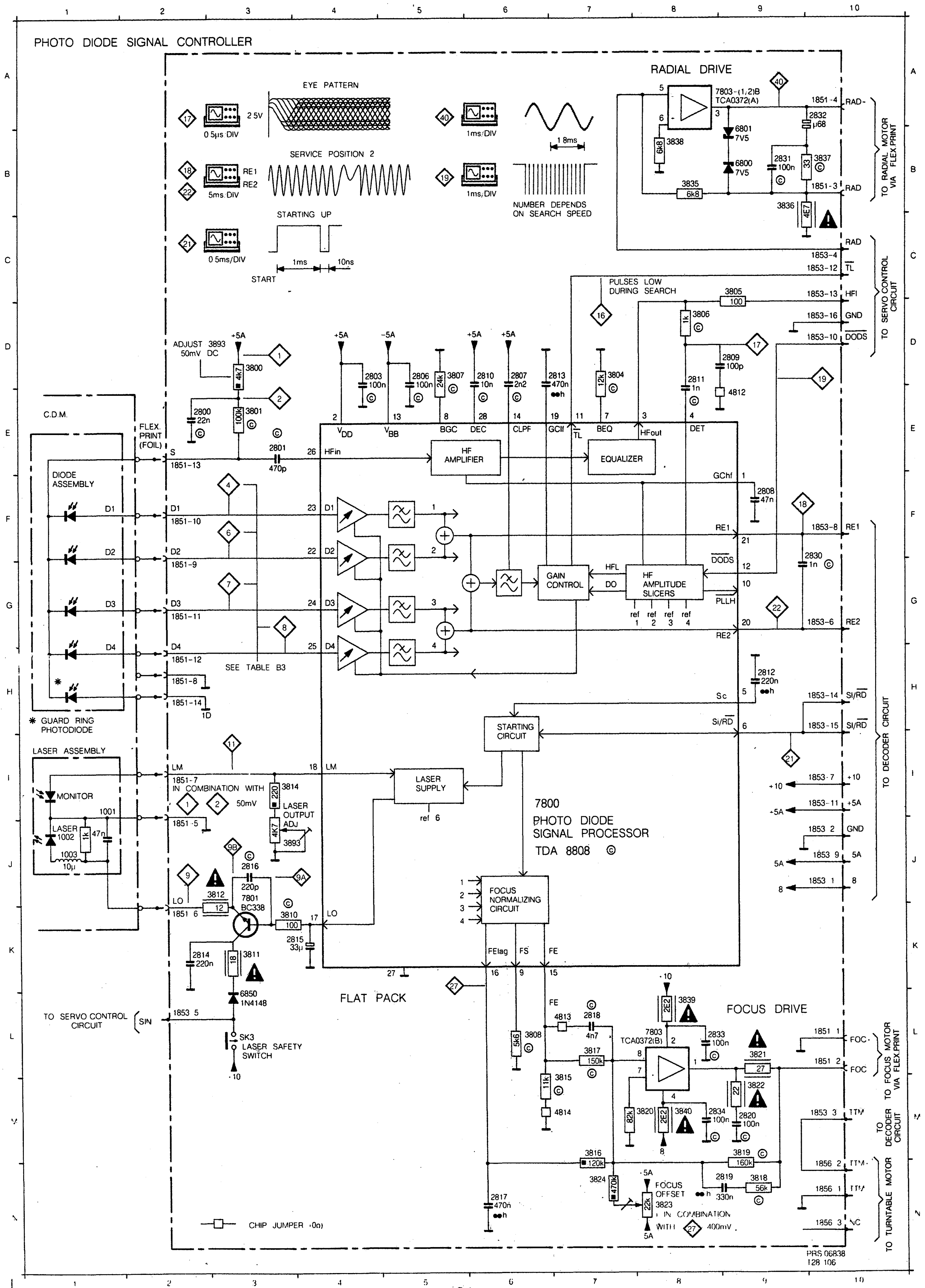
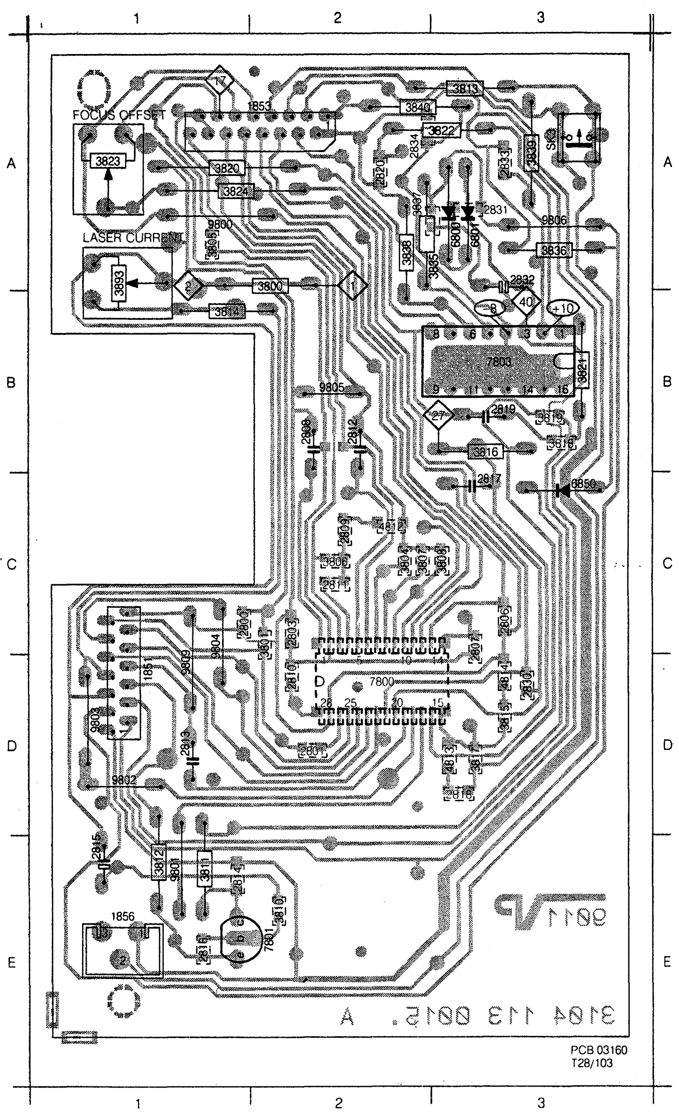
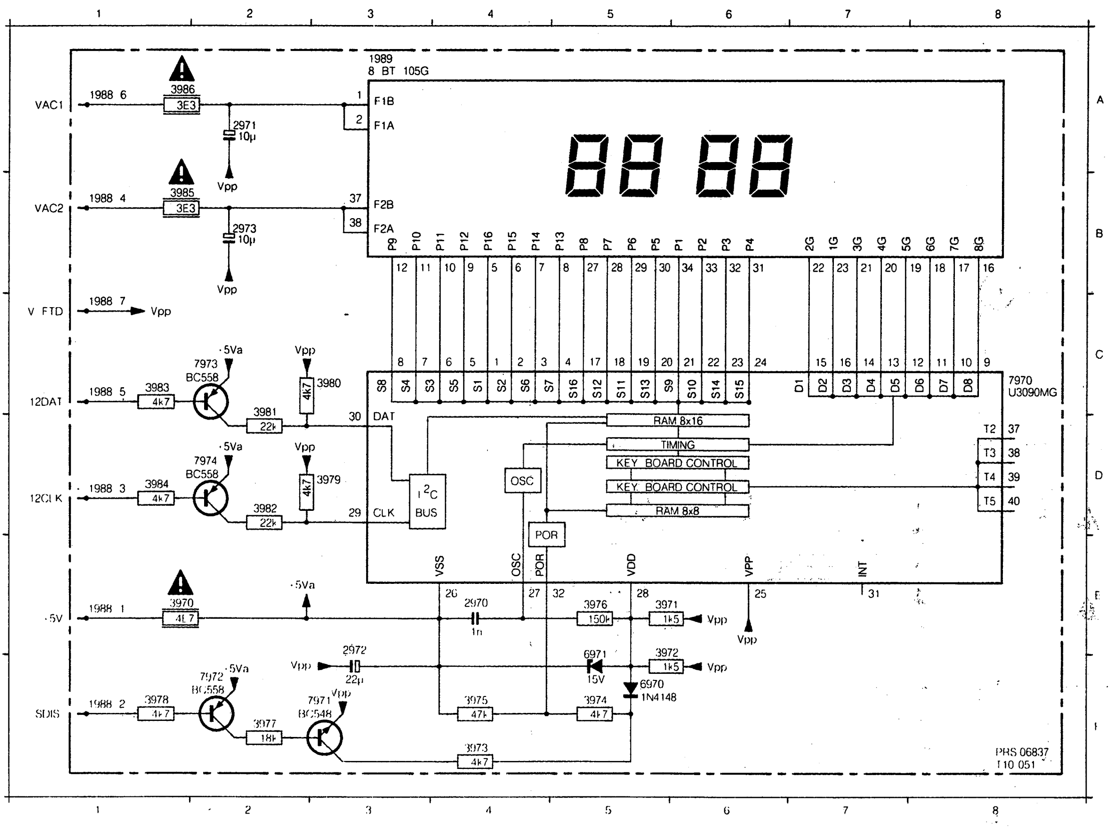


PHOTO DIODE SIGNAL CONTROLLER
RADIAL DRIVE
EYE PATTERN
2.5V
0.5µs/DIV
1ms/DIV
1.8ms
SERVICE POSITION 2
RE1
RE2
5ms/DIV
NUMBER DEPENDS ON SEARCH SPEED
STARTING UP
0.5ms/DIV
1ms
10ns
START
7803-(1,2)B TCA0372(A)
6801 7V5
6800 7V5
3838 6k8
3835 6k8
2832 µ68
2831 100n
3837 33
3836 4E7
RAD-
RAD
TO RADIAL MOTOR VIA FLEX PRINT
PULSES LOW DURING SEARCH
3805 100
3806 1k
TL
HFI
GND
DODS
TO SERVO CONTROL CIRCUIT
ADJUST 3893 50mV DC
3800 4k7
3801 100k
2800 22n
2801 470p
2803 100n
2806 100n
3807 2k
2810 10n
2807 2n2
2813 470n
3804 12k
2811 1n
2809 100p
4812
+5A
-5A
C.D.M.
FLEX PRINT (FOIL)
DIODE ASSEMBLY
D1
D2
D3
D4
VDD
VBB
BGC
DEC
CLPF
GCII
TL
BEQ
HFout
DET
HFin
HF AMPLIFIER
EQUALIZER
GChf
2808 47n
RE1
DODS
PLLH
RE2
HFL
DO
GAIN CONTROL
HF AMPLITUDE SLICERS
ref 1 ref 2 ref 3 ref 4
2830 1n
SEE TABLE B3
2812 220n
Sc
SI/RD
STARTING CIRCUIT
* GUARD RING PHOTODIODE
LASER ASSEMBLY
MONITOR
LASER 1002
1001
47n
1k
1003 10µ
LM
1851-7 IN COMBINATION WITH 50mV
3814 220
LASER OUTPUT ADJ
3893 4K7
LASER SUPPLY
ref 6
7800 PHOTO DIODE SIGNAL PROCESSOR TDA 8808
2816 220p
3812 12
7801 BC338
3810 100
2815 33µ
LO
FOCUS NORMALIZING CIRCUIT
2814 220n
3811 18
6850 1N4148
TO SERVO CONTROL CIRCUIT
SIN
1853-5
SK3 LASER SAFETY SWITCH
-10
FLAT PACK
FElag
FS
FE
FOCUS DRIVE
4813
2818 4n7
3808 5k6
3817 150k
3815 1k
4814
3839 2E2
7803 TCA0372(B)
2833 100n
3821 27
3822 22
3820 82k
3840 2E2
2834 100n
2820 100n
3816 120k
3824 470k
3819 160k
2819 330n
3818 56k
FOCUS OFFSET 3823 22k
IN COMBINATION WITH 400mV
2817 470n
CHIP JUMPER (0Ω)
FOC-
FOC
TO FOCUS MOTOR VIA FLEX PRINT
TTM
TO DECODER CIRCUIT
TO TURNTABLE MOTOR
RAD
TL
HFI
GND
DODS
RE1
RE2
SI/RD
+10
+5A
GND
5A
8
PRS 06838
128 106

SK3	A3	2812	B2	2834	A2	3815	D3	3838	A2	9800	A1
1851	D1	2813	D1	3800	A2	3816	B3	3839	A3	9801	E1
1853	A1	2814	E1	3801	D2	3817	D3	3840	A2	9802	D1
1856	E1	2815	E1	3804	C2	3818	B3	3893	B1	9803	D1
2800	C2	2816	E1	3805	A1	3819	B3	4812	C2	9804	D1
2801	D2	2817	C3	3806	C2	3820	A1	4813	D3	9805	B2
2803	C2	2818	D3	3807	C2	3821	B3	4814	D3	9806	A3
2806	C3	2819	B3	3808	C3	3822	A2	6800	A3	9809	D1
2807	D3	2820	A2	3810	E2	3823	A1	6801	A3		
2808	B2	2830	D3	3811	E1	3824	A1	6850	C3		
2809	C2	2831	A3	3812	E1	3835	A3	7800	D2		
2810	D2	2832	A3	3813	A3	3836	A3	7801	E2		
2811	C2	2833	A3	3814	B1	3837	A2	7803	B3		

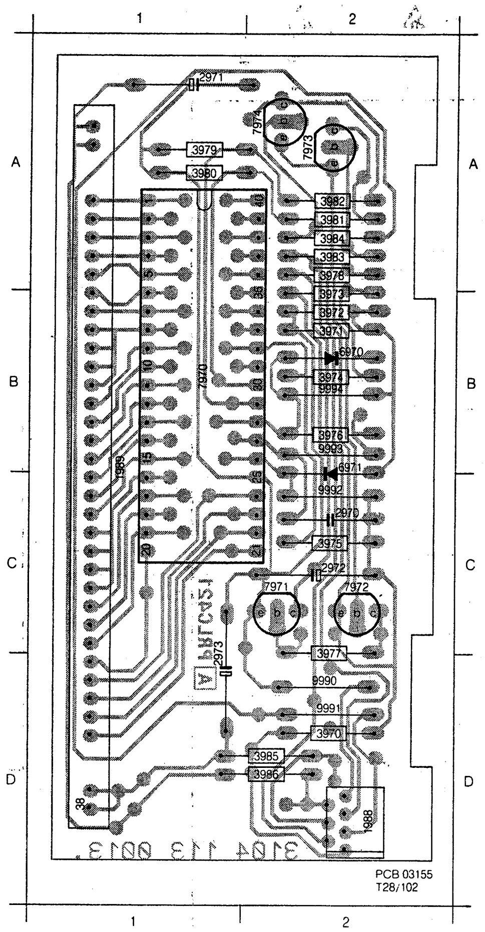

FOCUS OFFSET
LASER CURRENT
1853
3813
3840
3822
3820
3823
3824
3893
3800
3814
3805
3838
3836
9806
9805
7803
2816
3816
2817
6850
7800
1856
9802
3812
3811
7801
3104 113 0015 A
PCB 03160
128/103

Display


VAC1
VAC2
V FTD
I2DAT
I2CLK
-5V
SDIS
1989
8 BT 105G
88 88
7970
U3090MG
RAM 8x16
TIMING
KEY BOARD CONTROL
KEY BOARD CONTROL
RAM 8x8
I²C BUS
OSC
POR
VSS
VDD
VPP
INT
BC558
BC548
1N4148
PHS 06837
T10 051

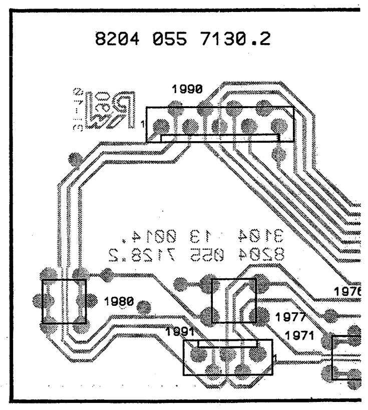
1989	A3
2970	E4
2971	A2
2972	E3
2973	B2
3970	E1
3971	E5
3972	F5
3973	F4
3974	F5
3975	F4
3976	E5
3977	F2
3978	F1
3979	D3
3980	C3
3981	D2
3982	D2
3983	C1
3984	D1
3985	B1
3986	A1
6970	F5
6971	F5
7970	C8
7971	F3
7972	F2
7973	C2
7974	D2

Keybo


3104 113 0013
PCB 03155
T28/102

1988	D2
1989	C1
2970	C2
2971	A1
2972	C2
2973	D1
3970	D2
3971	B2
3972	B2
3973	B2
3974	B2
3975	C2
3976	B2
3977	D2
3978	A2
3979	A1
3980	A1
3981	A2
3982	A2
3983	A2
3984	A2
3985	D2
3986	D2
6970	B2
6971	B2
7970	B1
7971	C2
7972	C2
7973	A2
7974	A2
9990	D2
9991	D2
9992	C2
9993	B2
9994	B2

KEY 1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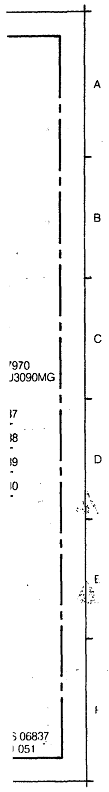
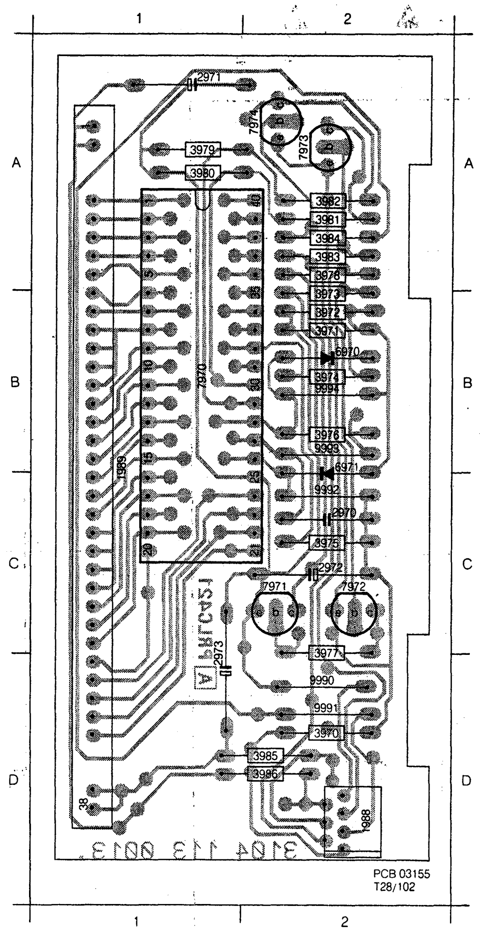
1990
3104 13 0014.
8204 055 7128.2
1980
1991
1977
1971

Keyboard


A
B
C
D
E
F
'970
J3090MG
S 06837
051

1989	A3
2970	E4
2971	A2
2972	E3
2973	B2
3970	E1
3971	E5
3972	F5
3973	F4
3974	F5
3975	F4
3976	E5
3977	F2
3978	F1
3979	D3
3980	C3
3981	D2
3982	D2
3983	C1
3984	D1
3985	B1
3986	A1
6970	F5
6971	F5
7970	C8
7971	F3
7972	F2
7973	C2
7974	D2


1
2
A
B
C
D
2971
7974
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3979
3980
3982
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3972
3974
3971
6970
9994
9993
6971
9992
2970
3975
7971
7972
1970
1989
2973
3977
9990
9991
3970
3985
3986
1988
3104 113 0013
PCB 03155
T28/102

1988	D2
1989	C1
2970	C2
2971	A1
2972	C2
2973	D1
3970	D2
3971	B2
3972	B2
3973	B2
3974	B2
3975	C2
3976	B2
3977	D2
3978	A2
3979	A1
3980	A1
3981	A2
3982	A2
3983	A2
3984	A2
3985	D2
3986	D2
6970	B2
6971	B2
7970	B1
7971	C2
7972	C2
7973	A2
7974	A2
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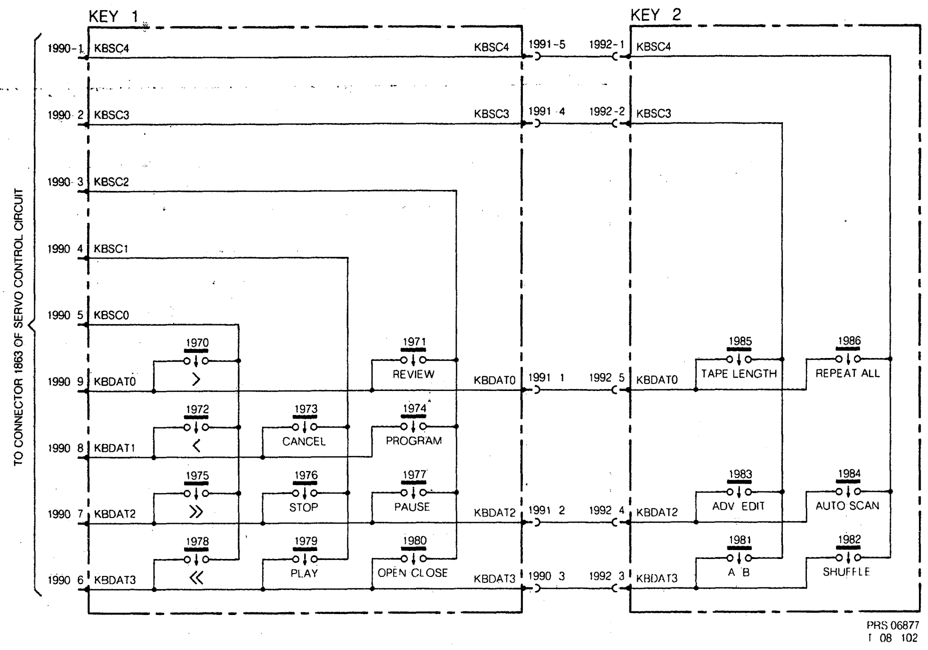
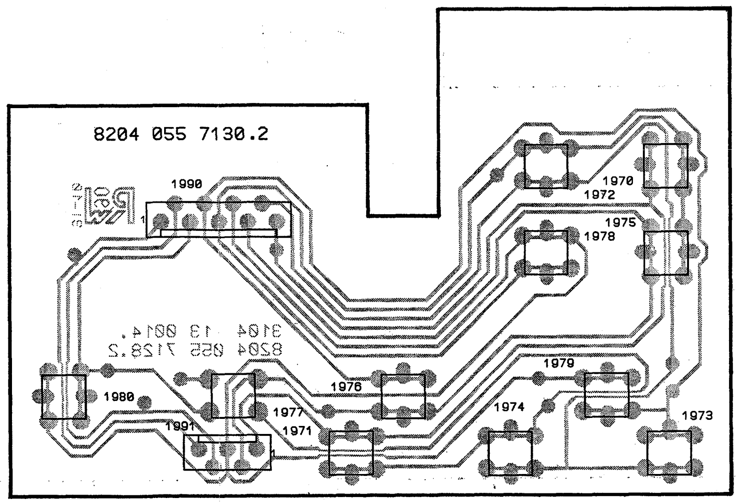
9992	C2
9993	B2
9994	B2

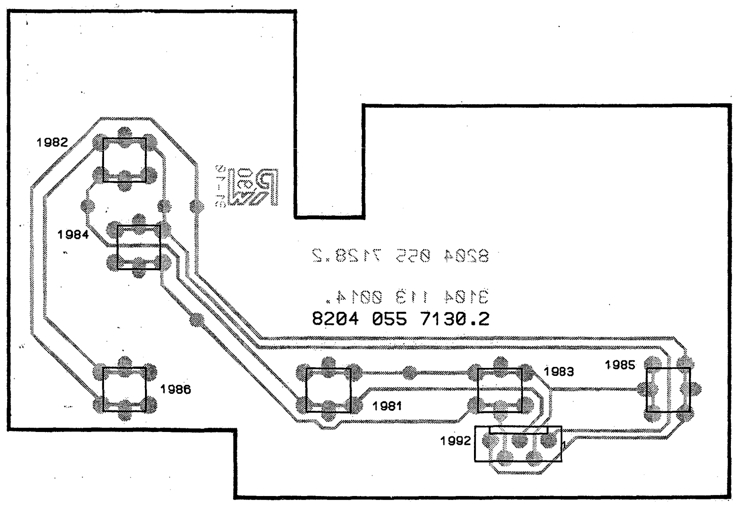

KEY 1
KEY 2
TO CONNECTOR 1863 OF SERVO CONTROL CIRCUIT
1990-1
1990 2
1990 3
1990 4
1990 5
1990 9
1990 8
1990 7
1990 6
KBSC4
KBSC3
KBSC2
KBSC1
KBSC0
KBDAT0
KBDAT1
KBDAT2
KBDAT3
1970
>
1972
<
1975
»
1978
«
1973
CANCEL
1976
STOP
1979
PLAY
1971
REVIEW
1974
PROGRAM
1977
PAUSE
1980
OPEN CLOSE
1991-5
1991 4
1991 1
1991 2
1990 3
1992-1
1992-2
1992 5
1992 4
1992 3
1985
TAPE LENGTH
1986
REPEAT ALL
1983
ADV EDIT
1984
AUTO SCAN
1981
A B
1982
SHUFFLE
PRS 06877
T 08 102

KEY 1

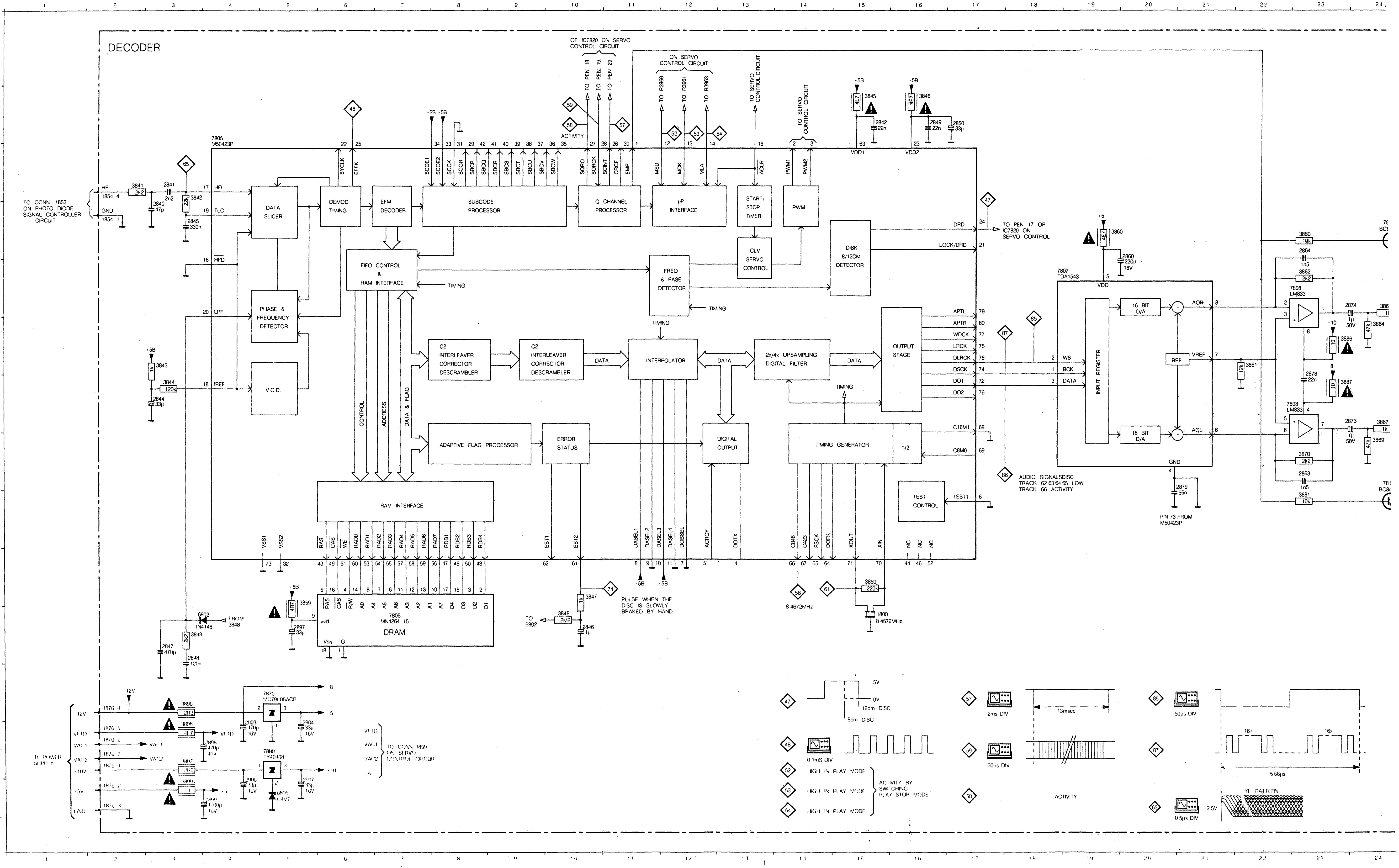

8204 055 7130.2
1990
1970
1972
1975
1978
3104 13 0014.
8204 055 7128.2
1988
1991
1977
1971
1976
1979
1974
1973

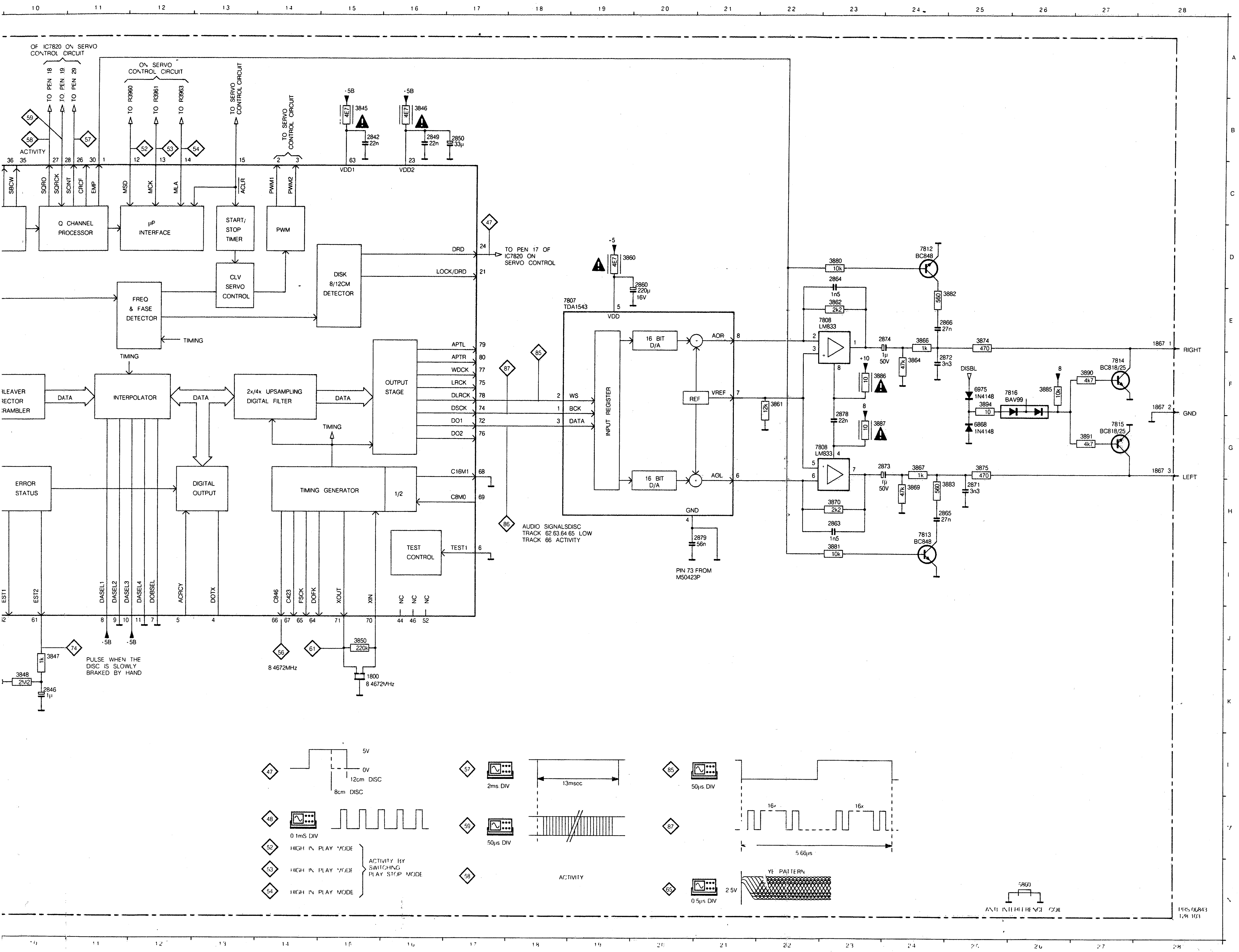
45 634 A14

KEY 2


1982
1984
8204 055 7128.2
3104 113 0014.
8204 055 7130.2
1986
1983
1985
1981
1992

45 635 A14


DECODER
7805
M50423P
DATA SLICER
DEMOD TIMING
EFM DECODER
SUBCODE PROCESSOR
Q CHANNEL PROCESSOR
μP INTERFACE
START/STOP TIMER
PWM
CLV SERVO CONTROL
DISK 8/12CM DETECTOR
FIFO CONTROL & RAM INTERFACE
FREQ & FASE DETECTOR
PHASE & FREQUENCY DETECTOR
VCO
C2 INTERLEAVER CORRECTOR DESCRAMBLER
INTERPOLATOR
2x/4x UPSAMPLING DIGITAL FILTER
OUTPUT STAGE
ADAPTIVE FLAG PROCESSOR
ERROR STATUS
DIGITAL OUTPUT
TIMING GENERATOR
TEST CONTROL
RAM INTERFACE
CONTROL
ADDRESS
DATA & FLAG
TIMING
DATA
TO CONN 1853 ON PHOTO DIODE SIGNAL CONTROLLER CIRCUIT
OF IC7820 ON SERVO CONTROL CIRCUIT
TO PEN 18
TO PEN 19
TO PEN 29
ON SERVO CONTROL CIRCUIT
TO R3960
TO R3961
TO R3963
TO SERVO CONTROL CIRCUIT
ACTIVITY
TO PEN 17 OF IC7820 ON SERVO CONTROL
7806
MN4264 15
DRAM
PULSE WHEN THE DISC IS SLOWLY BRAKED BY HAND
8.4672MHz
1800
7807
TDA1543
INPUT REGISTER
16 BIT D/A
REF
AOR
AOL
VREF
WS
BCK
DATA
VDD
GND
7808
LM833
AUDIO SIGNALSDISC TRACK 62.63.64.65 LOW TRACK 66 ACTIVITY
PIN 73 FROM M50423P
FROM 3848
TO 6802
7870
MC79L05ACP
7880
TY30408
VFTD
VAC1
VAC2
TO CONN 1859 ON SERVO CONTROL CIRCUIT
TO POWER SUPPLY
12V
-10V
-5V
GND
5V
0V
12cm DISC
8cm DISC
0.1mS DIV
2ms DIV
13msec
50μs DIV
ACTIVITY
HIGH IN PLAY MODE
ACTIVITY BY SWITCHING PLAY STOP MODE
50μs DIV
5.66μs
0.5μs DIV
2.5V
YE PATTERN


OF IC7820 ON SERVO CONTROL CIRCUIT
TO PEN 18
TO PEN 19
TO PEN 29
ON SERVO CONTROL CIRCUIT
TO R3960
TO R3961
TO R3963
TO SERVO CONTROL CIRCUIT
ACTIVITY
SBCW
SQRO
SQRCK
SCINT
CRCF
EMP
MSD
MCK
MLA
ACLR
PWM1
PWM2
Q CHANNEL PROCESSOR
µP INTERFACE
START/STOP TIMER
PWM
CLV SERVO CONTROL
DISK 8/12CM DETECTOR
FREQ & FASE DETECTOR
TIMING
DRD
LOCK/DRD
TO PEN 17 OF IC7820 ON SERVO CONTROL
VDD1
VDD2
3845
3846
4E7
2842 22n
2849 22n
2850 33µ
-5B
INTERLEAVER
CORRECTOR
SCRAMBLER
DATA
INTERPOLATOR
2x/4x UPSAMPLING DIGITAL FILTER
OUTPUT STAGE
APTL
APTR
WDCK
LRCK
DLRCK
DSCK
DO1
DO2
ERROR STATUS
DIGITAL OUTPUT
TIMING GENERATOR
1/2
C16M1
C8M0
TEST CONTROL
TEST1
EST1
EST2
DASEL1
DASEL2
DASEL3
DASEL4
DOBSEL
ACRCY
DOTX
C846
C423
FSCK
DOFK
XOUT
XIN
NC
3847 1k
3848 2M2
2846 1µ
PULSE WHEN THE DISC IS SLOWLY BRAKED BY HAND
3850 220k
1800 8.4672MHz
8.4672MHz
AUDIO SIGNALS DISC TRACK 62 63 64 65 LOW TRACK 66 ACTIVITY
7807 TDA1543
3860
2860 220µ 16V
VDD
WS
BCK
DATA
INPUT REGISTER
16 BIT D/A
REF
AOR
VREF
AOL
GND
3861 12k
2879 56n
PIN 73 FROM M50423P
7808 LM833
3880 10k
2864 1n5
3862 2k2
7812 BC848
3882 560
2866 27n
2874 1µ 50V
3866 1k
3864 47k
2872 3n3
3874 470
1867
RIGHT
GND
LEFT
3886 10
3887 10
2878 22n
DISBL
6975 1N4148
6868 1N4148
7816 BAV99
3894 10
3885 10k
3890 4k7
3891 4k7
7814 BC818/25
7815 BC818/25
2873 1µ 50V
3867 1k
3869 47k
3883 560
2871 3n3
3875 470
3870 2k2
2863 1n5
2865 27n
3881 10k
7813 BC848
5V
0V
12cm DISC
8cm DISC
0.1mS DIV
HIGH IN PLAY MODE
ACTIVITY BY SWITCHING PLAY STOP MODE
2ms DIV
13msec
50µs DIV
ACTIVITY
5.66µs
16x
YE PATTERN
2.5V
0.5µs DIV
5860
ANTI INTERFERENCE COIL
PRS 00843 128 103

1800	K15
2840	D3
2841	C3
2842	B15
2844	G3
2845	D3
2846	K10
2847	K3
2848	K3
2849	B16
2850	B17
2860	E20
2863	H23
2864	D23
2865	H24
2866	E24
2871	H25
2872	F24
2873	G24
2874	E24
2878	G23
2879	H21
2897	K5
2898	M4
2899	N4
2903	M4
2904	M5
2906	N4
2907	N5
3841	C2
3842	C3
3843	F3
3844	G3
3845	B15
3846	B16
3847	J10
3848	K10
3849	K3
3850	J15
3859	J5
3860	D19
3861	F22
3862	E23
3864	F24
3866	E24
3867	G24
3869	H24
3870	H23
3874	E25
3875	G25
3880	D23
3881	I23
3882	E24
3883	H24
3885	F26
3886	F23
3887	G23
3890	F27
3891	G27
3894	F25
3896	L3
3897	M3
3898	M3
3899	N3
5860	N26
6802	K4
6805	N5
6868	G25
6975	F25
7805	B4
7806	K7
7807	E18
7808	E22
7808	G22
7812	D24
7813	H24
7814	F27
7815	G27
7816	F26
7870	L5
7880	M5

1800	E5	2836	E8	2866	D1	2931	F2	3846	C7	3866	D1	3897	C9	3922	C3	3962	C5	6868	C3	7860	E6	9922	E3	9946	D4
1802	F5	2840	C7	2871	C2	2932	F2	3847	D6	3867	C2	3898	C8	3925	C4	3963	D5	6975	D4	7870	G9	9923	G6	9947	E4
1854	G7	2841	B7	2872	D1	3802	E8	3848	E6	3869	C2	3899	D9	3930	F3	4802	D1	7802	E7	7880	C8	9924	F8	9949	D4
1859	G4	2842	E6	2873	C2	3803	E8	3849	D4	3870	D2	3900	F6	3931	F2	4803	D2	7805	D6	9900	F3	9925	D5	9950	E4
1861	G1	2844	C5	2874	D1	3825	E7	3850	D5	3874	C1	3901	F6	3932	F2	4804	F4	7806	D7	9902	D5	9926	D3	9951	B5
1863	E1	2845	C5	2878	D2	3826	E7	3851	F3	3875	C1	3902	F5	3933	F2	4805	D2	7807	E2	9904	F1	9927	D4	9953	B4
1867	C1	2846	E6	2879	D3	3827	F8	3852	F3	3880	E2	3903	F4	3934	G2	4806	C2	7808	D2	9906	E5	9928	C6	9954	E9
1876	C9	2847	C4	2896	C5	3828	F8	3853	F2	3881	D3	3905	F5	3935	F1	4807	E3	7812	E2	9907	F3	9929	C5	9959	C8
2821	E7	2848	C4	2897	D8	3829	F8	3854	G2	3882	E1	3906	F5	3936	E1	4810	G2	7813	D3	9911	E7	9930	D3	9961	F6
2822	E8	2849	C7	2898	D9	3830	F8	3855	F2	3883	D2	3907	F1	3937	E2	4811	F5	7814	B2	9912	E7	9931	G9	9962	E2
2823	E8	2850	C6	2899	D9	3831	F8	3856	F6	3885	B1	3908	F5	3939	E7	5861	C7	7815	C1	9913	F7	9932	E8	9963	E1
2824	F8	2853	F2	2900	F6	3832	F6	3857	E6	3886	D3	3909	F5	3940	F1	6802	E7	7816	C2	9914	F7	9937	C8	9964	C4
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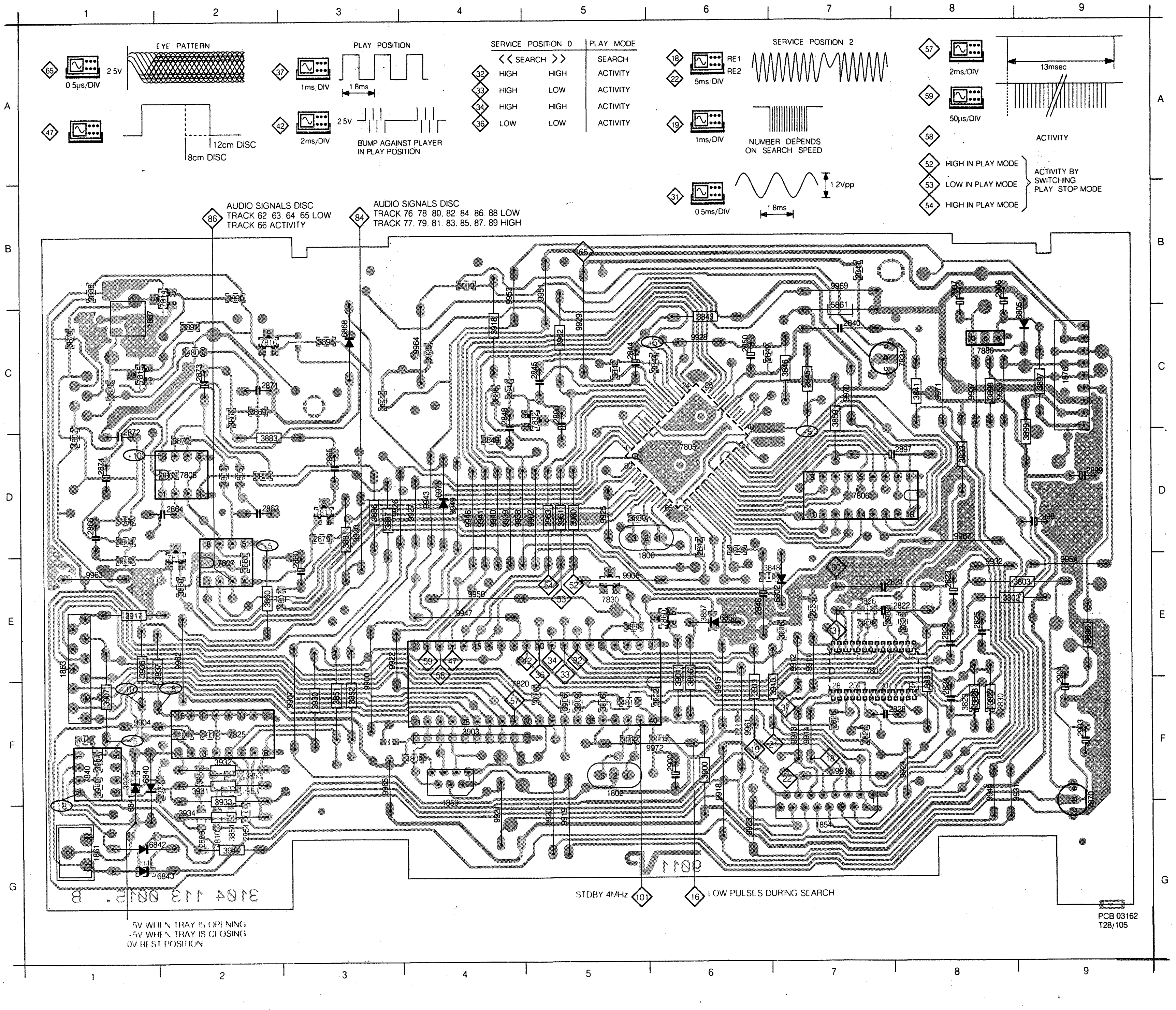
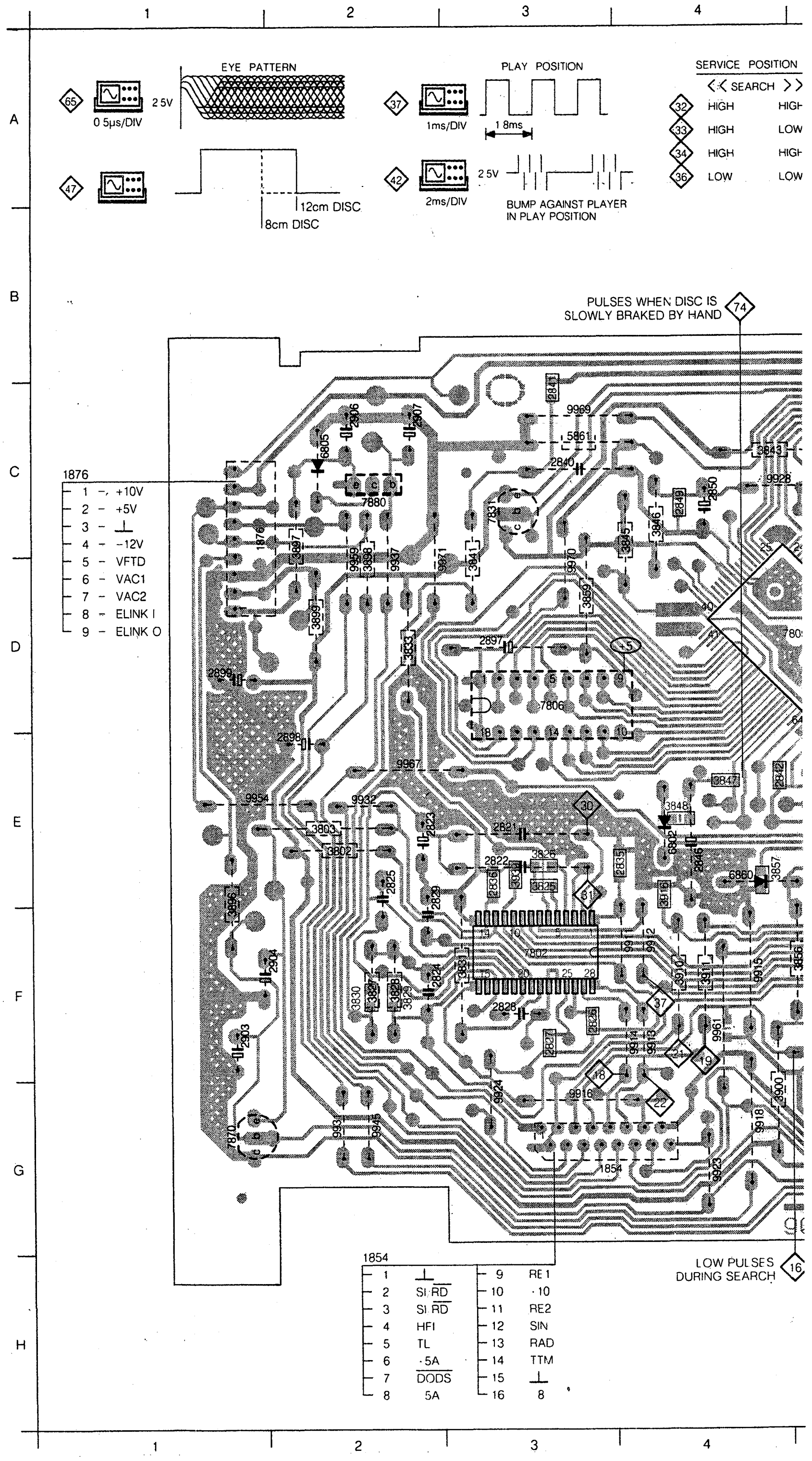
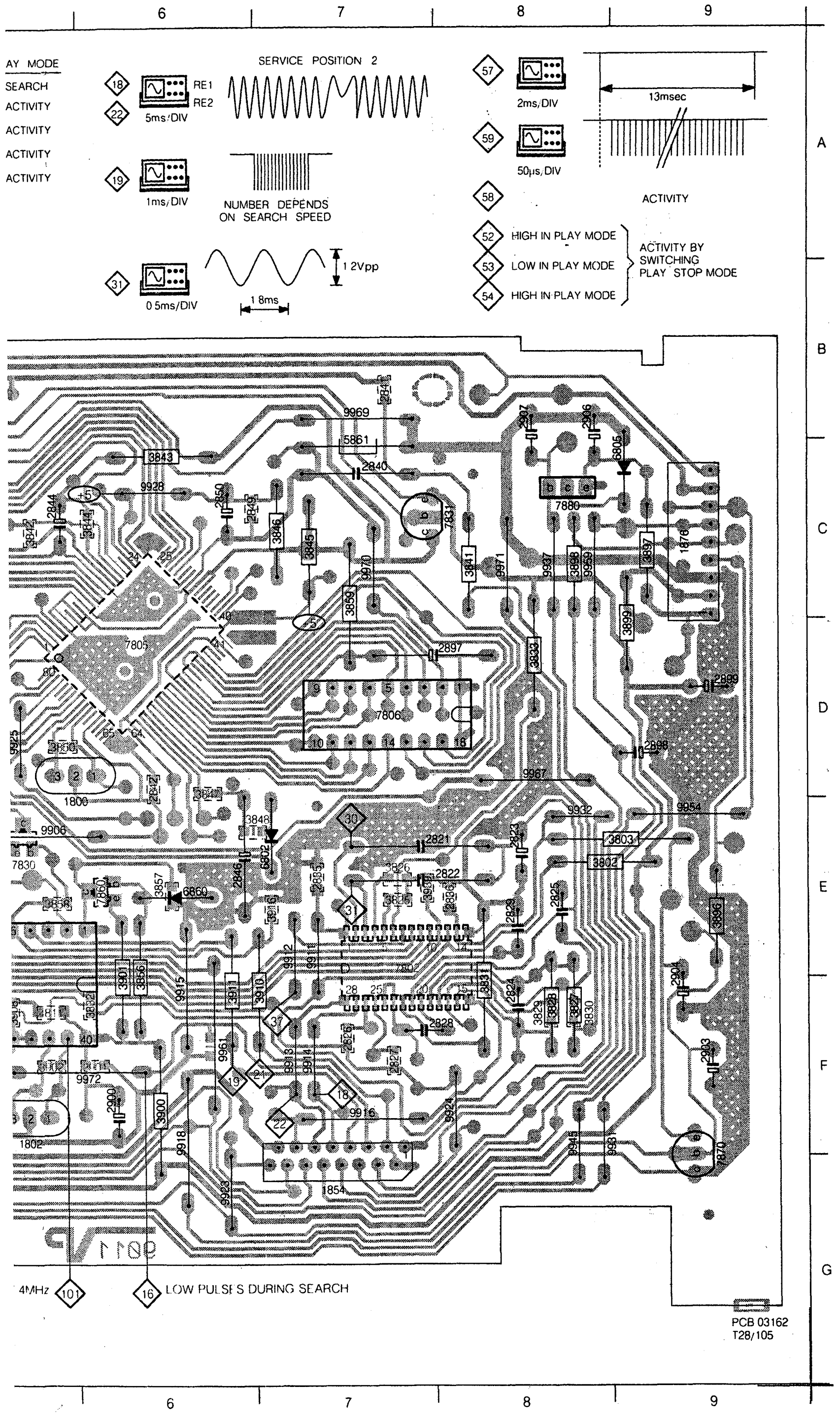
2826	F7	2855	G2	2903	F9	3841	C8	3859	C7	3888	C4	3911	F6	3942	F1	6840	F1	7825	F2	9916	F7	9939	D4	9967	D8
2827	F7	2860	E3	2904	F9	3842	C5	3860	E2	3890	B2	3916	E7	3943	G1	6841	G1	7830	E5	9918	F6	9940	D4	9969	B7
2828	F7	2863	D2	2906	B8	3843	C6	3861	E2	3891	C2	3917	E1	3944	G2	6842	G1	7831	C8	9919	G5	9941	D4	9970	C7
2829	E8	2864	D2	2907	B8	3844	C6	3862	D2	3894	C3	3918	C4	3960	D5	6843	G1	7832	C5	9920	G5	9943	D4	9971	C8
2835	E7	2865	D3	2930	F2	3845	C7	3864	D1	3896	E9	3919	B4	3961	D5	6860	E6	7840	F1	9921	G4	9945	G8	9972	F5


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
65
0 5µs/DIV
2 5V
EYE PATTERN
47
12cm DISC
8cm DISC
37
1ms DIV
PLAY POSITION
1 8ms
42
2ms/DIV
2 5V
BUMP AGAINST PLAYER
IN PLAY POSITION
SERVICE POSITION 0
PLAY MODE
<< SEARCH >>
SEARCH
32 HIGH HIGH ACTIVITY
33 HIGH LOW ACTIVITY
34 HIGH HIGH ACTIVITY
36 LOW LOW ACTIVITY
18
22
RE1
RE2
5ms/DIV
SERVICE POSITION 2
19
1ms/DIV
NUMBER DEPENDS
ON SEARCH SPEED
31
0 5ms/DIV
1 2Vpp
1 8ms
57
2ms/DIV
13msec
59
50µs/DIV
58
ACTIVITY
52 HIGH IN PLAY MODE
53 LOW IN PLAY MODE
54 HIGH IN PLAY MODE
ACTIVITY BY
SWITCHING
PLAY STOP MODE
86
AUDIO SIGNALS DISC
TRACK 62 63 64 65 LOW
TRACK 66 ACTIVITY
84
AUDIO SIGNALS DISC
TRACK 76 78 80 82 84 86 88 LOW
TRACK 77 79 81 83 85 87 89 HIGH
STDBY 4MHz
101
16
LOW PULSES DURING SEARCH
5V WHEN TRAY IS OPENING
-5V WHEN TRAY IS CLOSING
0V REST POSITION
PCB 03162
T28/105
3104 113 0015. B
9011

1800	E5	2828	F3	2854	G8	2898	E1	3827	F2	3849	D6	3866	E9	3891	C9
1802	G5	2829	F2	2855	G9	2899	D1	3828	F2	3850	E5	3867	D8	3894	C7
1854	G3	2835	E4	2860	E8	2900	G5	3829	F2	3851	F7	3869	D8	3896	F1
1859	G6	2836	E3	2863	D8	2901	F5	3830	F2	3852	F7	3870	D9	3897	D2
1861	G9	2840	C3	2864	D9	2903	F1	3831	F3	3853	G8	3874	C10	3898	D2
1863	F10	2841	C3	2865	D8	2904	F2	3832	F5	3854	G8	3875	D9	3899	D2
1867	C9	2842	E4	2866	E9	2906	C2	3833	D2	3855	G9	3880	E9	3900	G4
1876	C1	2844	C5	2871	C8	2907	C2	3841	D3	3856	F5	3881	E7	3901	F5
2821	E3	2845	C6	2872	D9	2930	F9	3842	C5	3857	E4	3882	E9	3902	F5
2822	E3	2846	E4	2873	C9	2931	F8	3843	C4	3858	E5	3883	D8	3903	F6
2823	E2	2847	D6	2874	D9	2932	G9	3844	C5	3859	D3	3885	C9	3905	F6
2824	F2	2848	D6	2878	D8	3802	E2	3845	C4	3860	E8	3886	E7	3906	F6
2825	E2	2849	C4	2879	E7	3803	E2	3846	C4	3861	E8	3887	E7	3907	F9
2826	F3	2850	C4	2896	D6	3825	E3	3847	E4	3862	D9	3888	D6	3908	F5
2827	F3	2853	G8	2897	D3	3826	E3	3848	E4	3864	E9	3890	C8	3909	F5

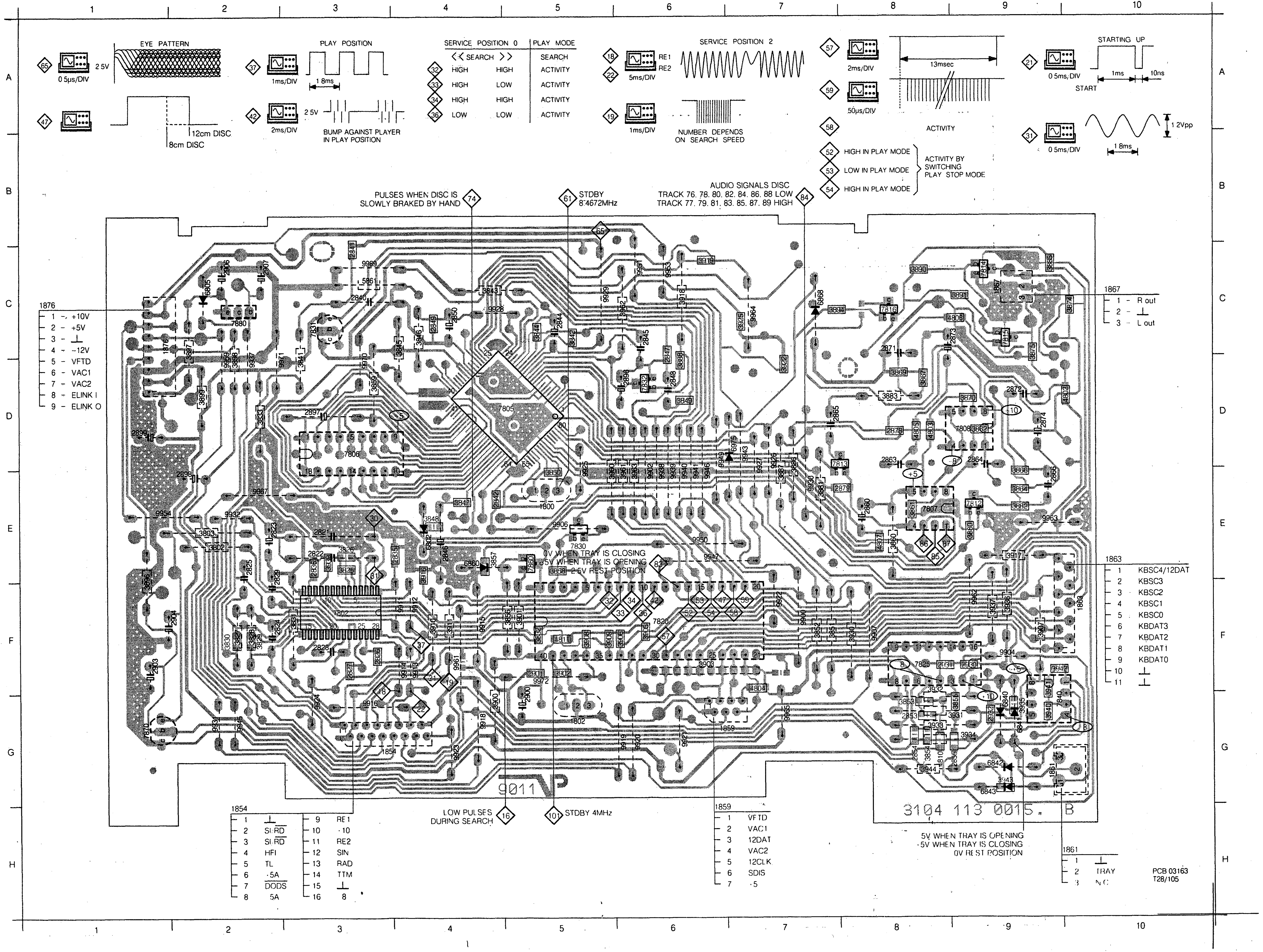

1
2
3
4
A
B
C
D
E
F
G
H
65
0 5µs/DIV
2 5V
EYE PATTERN
47
12cm DISC
8cm DISC
37
1ms/DIV
PLAY POSITION
1 8ms
42
2ms/DIV
2 5V
BUMP AGAINST PLAYER
IN PLAY POSITION
SERVICE POSITION
<< SEARCH >>
32 HIGH HIGH
33 HIGH LOW
34 HIGH HIGH
36 LOW LOW
PULSES WHEN DISC IS
SLOWLY BRAKED BY HAND
74
1876
1 - +10V
2 - +5V
3 - ⊥
4 - -12V
5 - VFTD
6 - VAC1
7 - VAC2
8 - ELINK I
9 - ELINK O
1854
1 ⊥
2 SI RD
3 SI RD
4 HFI
5 TL
6 -5A
7 DODS
8 5A
9 RE1
10 -10
11 RE2
12 SIN
13 RAD
14 TTM
15 ⊥
16 8
LOW PULSES
DURING SEARCH
16

3962	C5	6868	C3	7860	E6	9922	E3	9946	D4
3963	D5	6975	D4	7870	G9	9923	G6	9947	E4
4802	D1	7802	E7	7880	C8	9924	F8	9949	D4
4803	D2	7805	D6	9900	F3	9925	D5	9950	E4
4804	F4	7806	D7	9902	D5	9926	D3	9951	B5
4805	D2	7807	E2	9904	F1	9927	D4	9953	B4
4806	C2	7808	D2	9906	E5	9928	C6	9954	E9
4807	E3	7812	E2	9907	F3	9929	C5	9959	C8
4810	G2	7813	D3	9911	E7	9930	D3	9961	F6
4811	F5	7814	B2	9912	E7	9931	G9	9962	E2
5861	C7	7815	C1	9913	F7	9932	E8	9963	E1
6802	E7	7816	C2	9914	F7	9937	C8	9964	C4
6805	C9	7820	F4	9915	F6	9938	D4	9965	F3
6840	F1	7825	F2	9916	F7	9939	D4	9967	D8
6841	G1	7830	E5	9918	F6	9940	D4	9969	B7
6842	G1	7831	C8	9919	G5	9941	D4	9970	C7
6843	G1	7832	C5	9920	G5	9943	D4	9971	C8
6860	E6	7840	F1	9921	G4	9945	G8	9972	F5

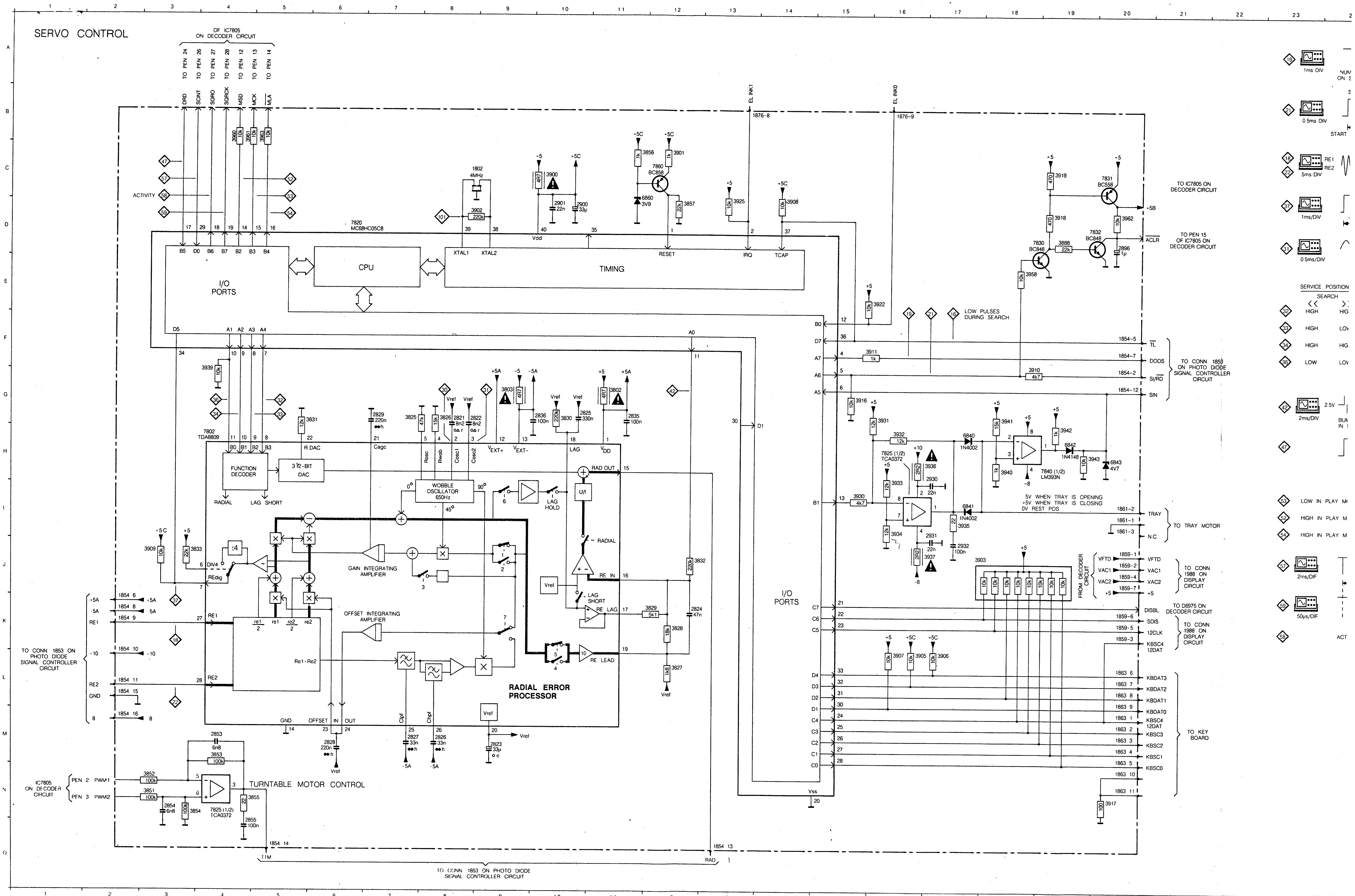

6
7
8
9
AY MODE
SEARCH
ACTIVITY
ACTIVITY
ACTIVITY
ACTIVITY
SERVICE POSITION 2
18
22
RE1
RE2
5ms/DIV
19
1ms/DIV
NUMBER DEPENDS
ON SEARCH SPEED
31
0 5ms/DIV
1 2Vpp
1 8ms
57
2ms/DIV
59
50μs/DIV
13msec
58
ACTIVITY
52
HIGH IN PLAY MODE
53
LOW IN PLAY MODE
54
HIGH IN PLAY MODE
ACTIVITY BY
SWITCHING
PLAY STOP MODE
A
B
C
D
E
F
G
1800
1802
1854
9011
4MHz
101
16
LOW PULSES DURING SEARCH
PCB 03162
T28/105

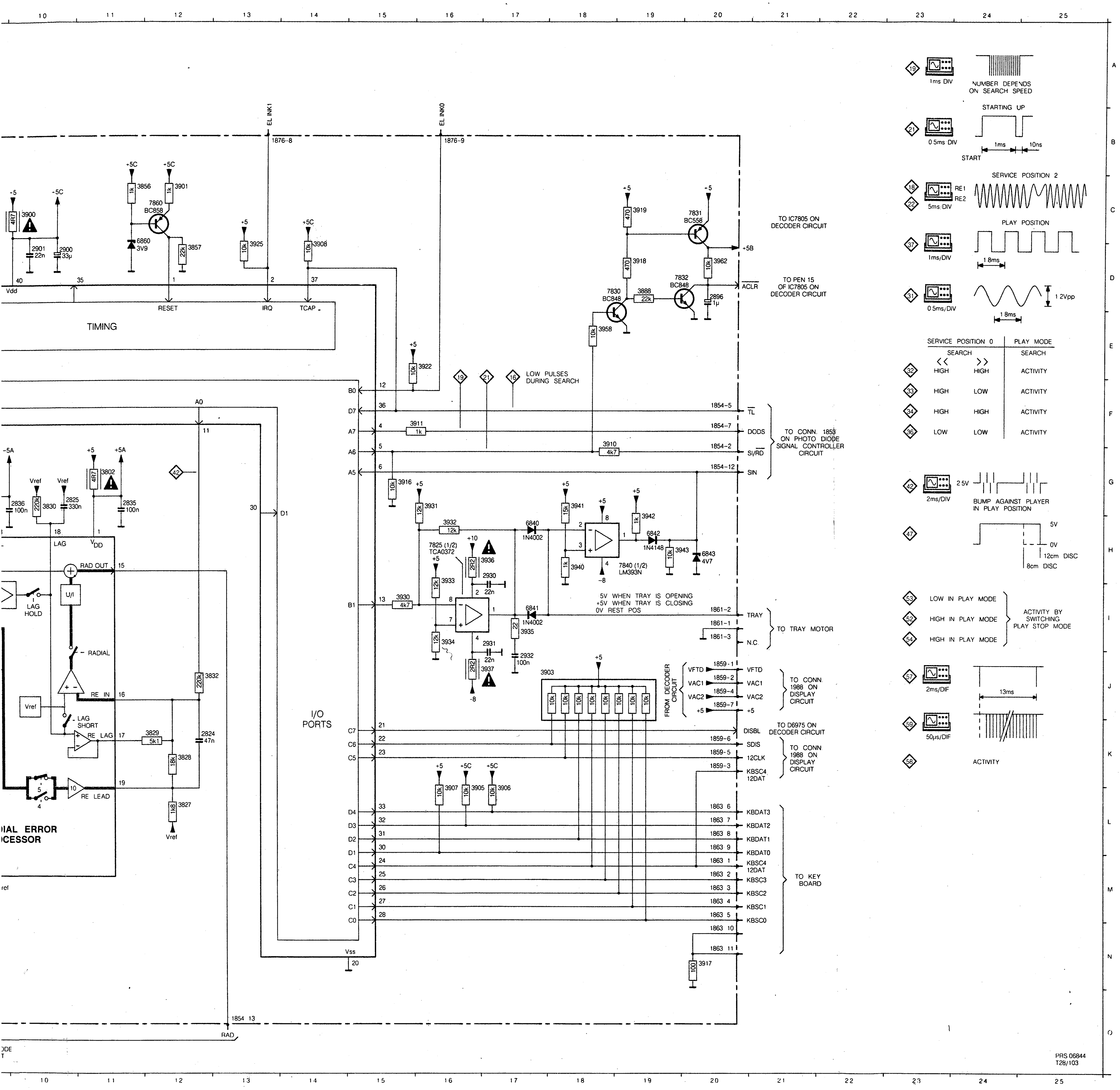
1800	E5	2828	F3	2854	G8	2898	E1	3827	F2	3849	D6	3866	E9	3891	C9
1802	G5	2829	F2	2855	G9	2899	D1	3828	F2	3850	E5	3867	D8	3894	C7
1854	G3	2835	E4	2860	E8	2900	G5	3829	F2	3851	F7	3869	D8	3896	F1
1859	G6	2836	E3	2863	D8	2901	F5	3830	F2	3852	F7	3870	D9	3897	D2
1861	G9	2840	C3	2864	D9	2903	F1	3831	F3	3853	G8	3874	C10	3898	D2
1863	F10	2841	C3	2865	D8	2904	F2	3832	F5	3854	G8	3875	D9	3899	D2
1867	C9	2842	E4	2866	E9	2906	C2	3833	D2	3855	G9	3880	E9	3900	G4
1876	C1	2844	C5	2871	C8	2907	C2	3841	D3	3856	F5	3881	E7	3901	F5
2821	E3	2845	C6	2872	D9	2930	F9	3842	C5	3857	E4	3882	E9	3902	F5
2822	E3	2846	E4	2873	C9	2931	F8	3843	C4	3858	E5	3883	D8	3903	F6
2823	E2	2847	D6	2874	D9	2932	G9	3844	C5	3859	D3	3885	C9	3905	F6
2824	F2	2848	D6	2878	D8	3802	E2	3845	C4	3860	E8	3886	E7	3906	F6
2825	E2	2849	C4	2879	E7	3803	E2	3846	C4	3861	E8	3887	E7	3907	F9
2826	F3	2850	C4	2896	D6	3825	E3	3847	E4	3862	D9	3888	D6	3908	F5
2827	F3	2853	G8	2897	D3	3826	E3	3848	E4	3864	E9	3890	C8	3909	F5

3910	F4	3937	F9	4806	C8	7805	D4	7860	E5	9919	G6	9938	E6	9962	F9
3911	F4	3939	E3	4807	E8	7806	D3	7870	G1	9920	G6	9939	E6	9963	E9
3916	F4	3940	G9	4810	G8	7807	E8	7880	C2	9921	G6	9940	E6	9964	C7
3917	E9	3941	G9	4811	F5	7808	D9	9900	F7	9922	F7	9941	E6	9965	G7
3918	C6	3942	F9	5861	C3	7812	E9	9902	E6	9923	G4	9943	D7	9967	E2
3919	C6	3943	G9	6802	E4	7813	D7	9904	F9	9924	G3	9945	G2	9969	C3
3922	D7	3944	G8	6805	C2	7814	C9	9906	E5	9925	E5	9946	E6	9970	D3
3925	C7	3960	E6	6840	G9	7815	C9	9907	F8	9926	E7	9947	E6	9971	D3
3930	F8	3961	E6	6841	G9	7816	C8	9911	F4	9927	E7	9949	D6	9972	F5
3931	G8	3962	C6	6842	G9	7820	F6	9912	F4	9928	C4	9950	E6		
3932	F8	3963	E6	6843	G9	7825	F8	9913	F4	9929	C5	9951	C6		
3933	G8	4802	D10	6860	E4	7830	E5	9914	F4	9930	E7	9953	C6		
3934	G9	4803	D8	6868	C7	7831	C3	9915	F4	9931	G2	9954	E1		
3935	G9	4804	F7	6975	D7	7832	D6	9916	G3	9932	E2	9959	D2		
3936	F9	4805	D8	7802	F3	7840	G9	9918	G4	9937	D2	9961	F4		


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
65
0 5μs/DIV
2 5V
EYE PATTERN
47
12cm DISC
8cm DISC
37
1ms/DIV
PLAY POSITION
1 8ms
42
2ms/DIV
2 5V
BUMP AGAINST PLAYER
IN PLAY POSITION
SERVICE POSITION 0
PLAY MODE
<< SEARCH >>
SEARCH
32 HIGH HIGH ACTIVITY
33 HIGH LOW ACTIVITY
34 HIGH HIGH ACTIVITY
36 LOW LOW ACTIVITY
SERVICE POSITION 2
18
22
RE1
RE2
5ms/DIV
19
1ms/DIV
NUMBER DEPENDS
ON SEARCH SPEED
57
2ms/DIV
59
50μs/DIV
13msec
58
ACTIVITY
52 HIGH IN PLAY MODE
53 LOW IN PLAY MODE
54 HIGH IN PLAY MODE
ACTIVITY BY
SWITCHING
PLAY STOP MODE
21
0 5ms/DIV
STARTING UP
1ms
10ns
START
31
0 5ms/DIV
1 2Vpp
1 8ms
PULSES WHEN DISC IS
SLOWLY BRAKED BY HAND
74
61
STDBY
8 4672MHz
AUDIO SIGNALS DISC
TRACK 76. 78. 80. 82. 84. 86. 88 LOW
TRACK 77. 79. 81. 83. 85. 87. 89 HIGH
84
1876
1 - +10V
2 - +5V
3 - ⊥
4 - -12V
5 - VFTD
6 - VAC1
7 - VAC2
8 - ELINK I
9 - ELINK O
1867
1 - R out
2 - ⊥
3 - L out
0V WHEN TRAY IS CLOSING
5V WHEN TRAY IS OPENING
2 6V REST POSITION
1863
1 KBSC4/12DAT
2 KBSC3
3 KBSC2
4 KBSC1
5 KBSC0
6 KBDAT3
7 KBDAT2
8 KBDAT1
9 KBDAT0
10 ⊥
11 ⊥
9011
3104 113 0015. B
1854
1 ⊥
2 SI/RD
3 SI/RD
4 HFI
5 TL
6 ·5A
7 DODS
8 5A
9 RE1
10 ·10
11 RE2
12 SIN
13 RAD
14 TTM
15 ⊥
16 8
LOW PULSES
DURING SEARCH
16
101
STDBY 4MHz
1859
1 VFTD
2 VAC1
3 12DAT
4 VAC2
5 12CLK
6 SDIS
7 ·5
5V WHEN TRAY IS OPENING
·5V WHEN TRAY IS CLOSING
0V REST POSITION
1861
1 ⊥
2 TRAY
3 N.C
PCB 03163
T28/105

SERVO CONTROL


OF IC7805 ON DECODER CIRCUIT
TO PEN 24
TO PEN 26
TO PEN 27
TO PEN 28
TO PEN 12
TO PEN 13
TO PEN 14
DRD
SCINT
SQRO
SQRCK
MSD
MCK
MLA
ACTIVITY
7820 MC68HC05C8
I/O PORTS
CPU
TIMING
XTAL1
XTAL2
RESET
IRQ
TCAP
1802 4MHz
EL INK1
EL INK0
1876-8
1876-9
7860 BC858
6860 3V9
7831 BC558
7830 BC848
7832 BC848
TO IC7805 ON DECODER CIRCUIT
TO PEN 15 OF IC7805 ON DECODER CIRCUIT
-5B
ACLR
LOW PULSES DURING SEARCH
TL
DODS
SI/RD
SIN
TO CONN 1853 ON PHOTO DIODE SIGNAL CONTROLLER CIRCUIT
7802 TDA8809
FUNCTION DECODER
3 1/2-BIT DAC
R DAC
RADIAL
LAG SHORT
WOBBLE OSCILLATOR 650Hz
GAIN INTEGRATING AMPLIFIER
OFFSET INTEGRATING AMPLIFIER
LAG HOLD
RAD OUT
RE IN
RE LAG
RE LEAD
RADIAL ERROR PROCESSOR
U/I
Vref
7825 (1/2) TCA0372
7840 (1/2) LM393N
6840 1N4002
6841 1N4002
6842 1N4148
6843 4V7
5V WHEN TRAY IS OPENING
+5V WHEN TRAY IS CLOSING
0V REST POS
TRAY
N.C.
TO TRAY MOTOR
FROM DECODER CIRCUIT
VFTD
VAC1
VAC2
TO CONN 1988 ON DISPLAY CIRCUIT
DISBL
TO D6975 ON DECODER CIRCUIT
SDIS
12CLK
KBSC4 12DAT
KBDAT3
KBDAT2
KBDAT1
KBDAT0
KBSC3
KBSC2
KBSC1
KBSC0
TO KEY BOARD
I/O PORTS
Vss
TO CONN 1853 ON PHOTO DIODE SIGNAL CONTROLLER CIRCUIT
IC7805 ON DECODER CIRCUIT
PEN 2 PWM1
PEN 3 PWM2
TURNTABLE MOTOR CONTROL
7825 (1/2) TCA0372
TIM
RAD
TO CONN 1853 ON PHOTO DIODE SIGNAL CONTROLLER CIRCUIT
1ms DIV
0.5ms DIV
5ms DIV
1ms/DIV
0.5ms/DIV
SERVICE POSITION
SEARCH
HIGH
LOW
2ms/DIV
2.5V
LOW IN PLAY
HIGH IN PLAY
2ms/DIF
50µs/DIF
START
ACT

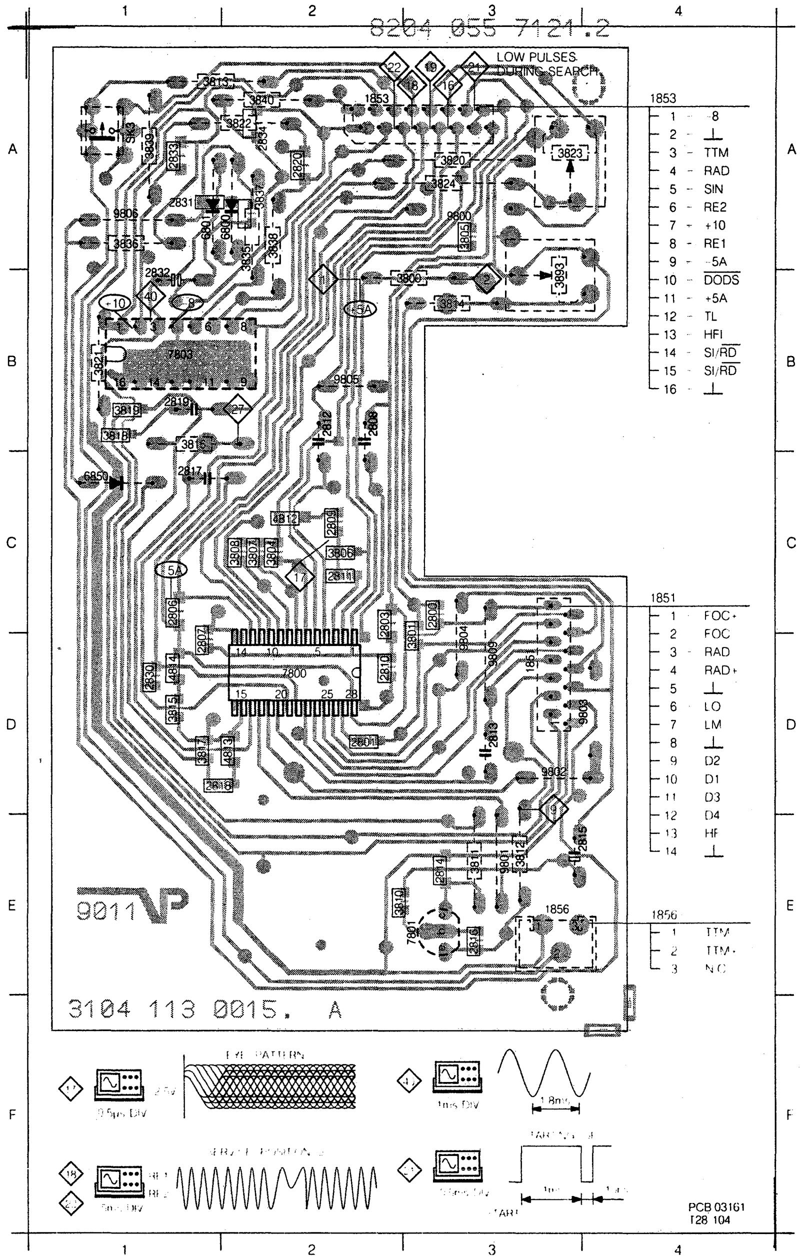


10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
EL INK1
EL INK0
1876-8
1876-9
+5C
-5C
3856
1k
3901
7860
BC858
6860
3V9
3857
22k
+5
3925
10k
+5C
3908
3900
4R7
2901
22n
2900
33µ
Vdd
40
35
1
2
37
RESET
IRQ
TCAP
TIMING
+5
3919
470
7831
BC558
+5B
3918
470
3962
10k
7830
BC848
3888
22k
7832
BC848
2896
1µ
3958
10k
ACLR
TO IC7805 ON DECODER CIRCUIT
TO PEN 15 OF IC7805 ON DECODER CIRCUIT
3922
10k
LOW PULSES DURING SEARCH
19
21
16
B0
D7
A7
A6
A5
A0
11
12
36
4
5
6
3911
1k
3910
4k7
1854-5
1854-7
1854-2
1854-12
TL
DODS
SI/RD
SIN
TO CONN. 1853 ON PHOTO DIODE SIGNAL CONTROLLER CIRCUIT
-5A
+5A
Vref
2836
100n
3830
220k
2825
330n
3802
4R7
2835
100n
42
18
LAG
VDD
RAD OUT
15
LAG HOLD
U/I
RADIAL
Vref
RE IN
16
LAG SHORT
RE LAG
17
3829
5k1
3832
220k
2824
47n
3828
18k
RE LEAD
19
3827
1k8
Vref
5
4
10
IAL ERROR
CESSOR
30
D1
3916
10k
3931
12k
3932
12k
6840
1N4002
+10
7825 (1/2)
TCA0372
3936
2R2
2930
22n
3933
12k
3930
4k7
13
8
7
6
2
1
4
3934
12k
2931
22n
3937
2R2
-8
6841
1N4002
3935
22
2932
100n
3941
15k
7840 (1/2)
LM393N
3940
1k
3942
1k
6842
1N4148
3943
10k
6843
4V7
5V WHEN TRAY IS OPENING
+5V WHEN TRAY IS CLOSING
0V REST POS
B1
1861-2
1861-1
1861-3
TRAY
N.C.
TO TRAY MOTOR
I/O PORTS
3903
10k
FROM DECODER CIRCUIT
VFTD
VAC1
VAC2
1859-1
1859-2
1859-4
1859-7
TO CONN 1988 ON DISPLAY CIRCUIT
C7
C6
C5
21
22
23
DISBL
TO D6975 ON DECODER CIRCUIT
1859-6
1859-5
1859-3
SDIS
12CLK
KBSC4
12DAT
3907
3905
3906
D4
D3
D2
D1
C4
C3
C2
C1
C0
33
32
31
30
24
25
26
27
28
1863 6
1863 7
1863 8
1863 9
1863 1
1863 2
1863 3
1863 4
1863 5
1863 10
1863 11
KBDAT3
KBDAT2
KBDAT1
KBDAT0
KBSC3
KBSC2
KBSC1
KBSC0
TO KEY BOARD
3917
100
Vss
20
1854 13
RAD
DE
ref
1ms DIV
NUMBER DEPENDS ON SEARCH SPEED
STARTING UP
0 5ms DIV
1ms
10ns
START
SERVICE POSITION 2
18
22
RE1
RE2
5ms/DIV
PLAY POSITION
37
1ms/DIV
1 8ms
31
0 5ms/DIV
1 2Vpp
1 8ms
42
2 5V
2ms/DIV
BUMP AGAINST PLAYER IN PLAY POSITION
47
5V
0V
12cm DISC
8cm DISC
53
52
54
LOW IN PLAY MODE
HIGH IN PLAY MODE
HIGH IN PLAY MODE
ACTIVITY BY SWITCHING PLAY STOP MODE
57
2ms/DIF
13ms
59
50µs/DIF
58
ACTIVITY
PRS 06844
T28/103

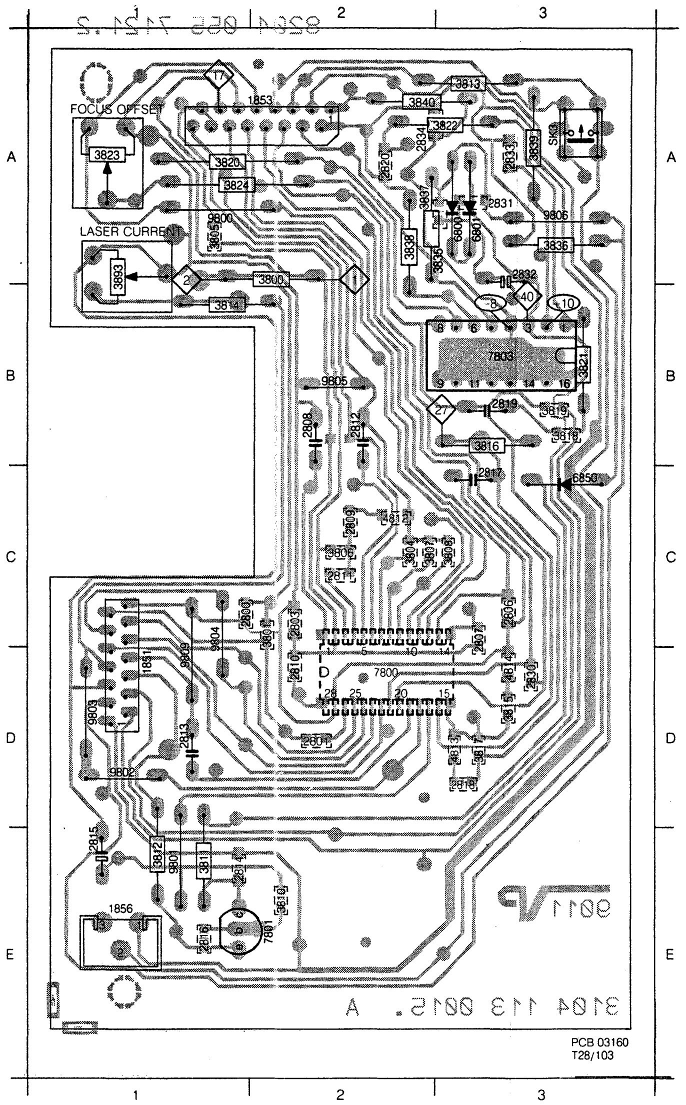
	SERVICE POSITION 0		PLAY MODE
	SEARCH		SEARCH
	<<	>>	
32	HIGH	HIGH	ACTIVITY
33	HIGH	LOW	ACTIVITY
34	HIGH	HIGH	ACTIVITY
36	LOW	LOW	ACTIVITY

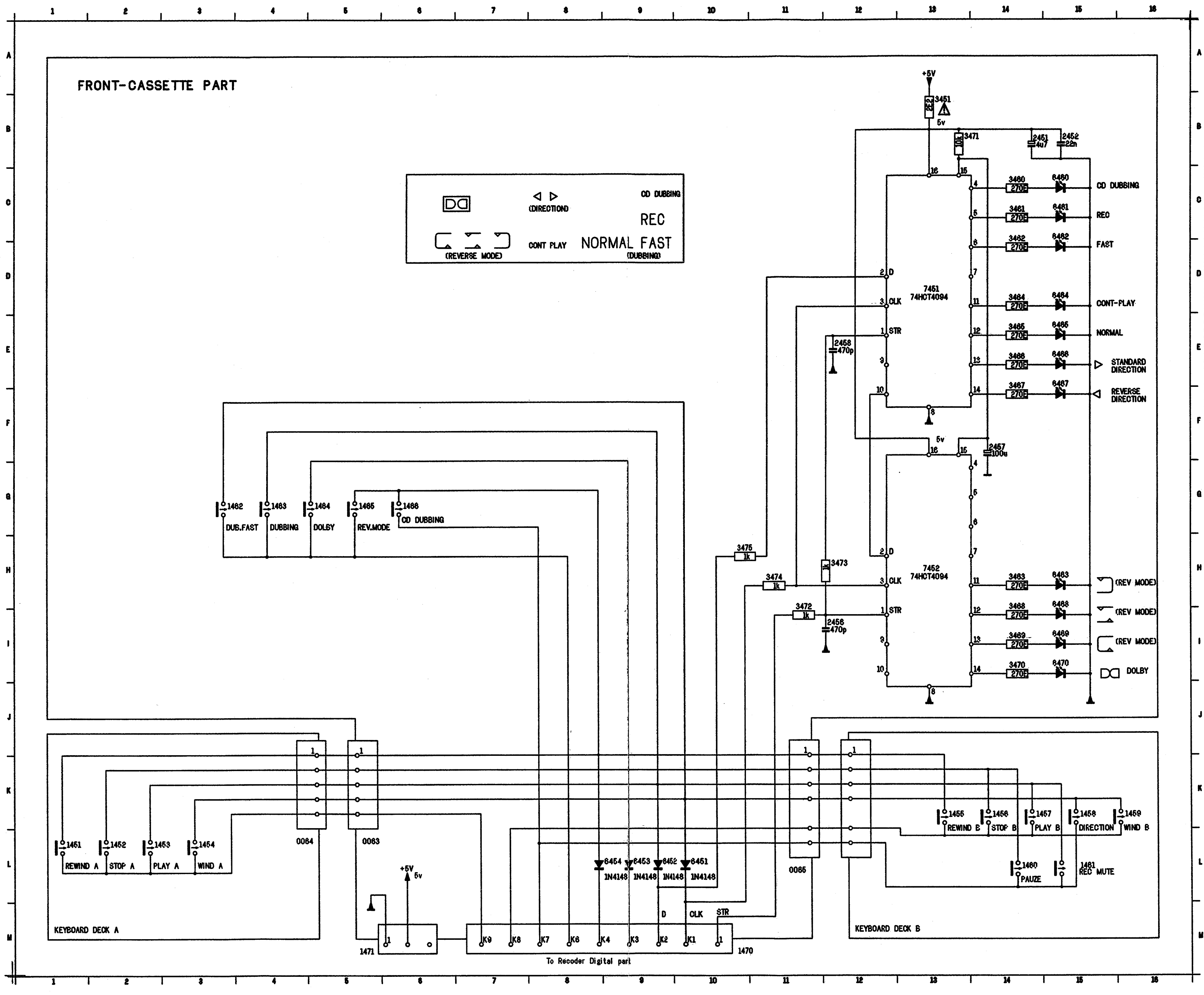
1802	C8
2821	G8
2822	G8
2823	M9
2824	K12
2825	G10
2826	M8
2827	M7
2828	M6
2829	G7
2835	G11
2836	G10
2853	M4
2854	N3
2855	O4
2896	D20
2900	D10
2901	D10
2930	H17
2931	I 17
2932	J17
3802	G11
3803	G9
3825	G7
3826	G8
3827	L12
3828	K12
3829	K12
3830	G10
3831	G5
3832	J12
3833	J3
3851	N3
3852	N3
3853	M4
3854	N3
3855	N4
3856	C11
3857	D12
3888	D19
3900	C10
3901	C12
3902	D8
3903	J18
3905	L16
3906	L17
3907	L16
3908	D14
3909	J3
3910	F18
3911	F16
3916	G15
3917	N20
3918	D19
3919	C19
3922	E16
3925	D13
3930	I 15
3931	G16
3932	H16
3933	I 16
3934	I 16
3935	I 17
3936	H17
3937	J17
3939	G4
3940	H18
3941	G18
3942	H19
3943	H19
3958	E18
3960	B4
3961	B4
3962	D20
3963	B5
6840	H17
6841	I 17
6842	H19
6843	H20
6860	D11
7802	H4
7820	D6
7825	H16
7825	N4
7830	D18
7831	C20
7832	D19
7840	H19
7860	C12

SK3	A1	2811	C2	2832	B1	3812	E3	3824	A3	6801	A1	9809	D3
1851	D3	2812	B2	2833	A1	3813	A1	3835	B2	6850	C1		
1853	A2	2813	D3	2834	A2	3814	B3	3836	A1	7800	D2		
1856	E3	2814	E3	3800	B2	3815	D1	3837	A2	7801	E3		
2800	C3	2815	E4	3801	D3	3816	B1	3838	A2	7803	B1		
2801	D2	2816	E3	3804	C2	3817	D1	3839	A1	9800	A3		
2803	D2	2817	C1	3805	A3	3818	B1	3840	A2	9801	E3		
2806	C1	2818	D1	3806	C2	3819	B1	3893	B3	9802	D3		
2807	D1	2819	B1	3807	C2	3820	A3	4812	C2	9803	D4		
2808	B2	2820	A2	3808	C2	3821	B1	4813	D2	9804	D3		
2809	C2	2830	D1	3810	E3	3822	A2	4814	D1	9805	B2		
2810	D2	2831	A1	3811	E3	3823	A3	6800	A2	9806	A1		


8204 055 7121.2
LOW PULSES
DURING SEARCH
1853
1 - -8
2 - ⊥
3 - TTM
4 - RAD
5 - SIN
6 - RE2
7 - +10
8 - RE1
9 - -5A
10 - DODS
11 - +5A
12 - TL
13 - HFI
14 - SI/RD
15 - SI/RD
16 - ⊥
1851
1 FOC+
2 FOC
3 RAD
4 RAD+
5 ⊥
6 LO
7 LM
8 ⊥
9 D2
10 D1
11 D3
12 D4
13 HF
14 ⊥
1856
1 TTM
2 TTM+
3 N.C
7800
7803
7801
9011
3104 113 0015. A
EYE PATTERN
0.5µs/DIV
1ms/DIV
1.8ms
5ms/DIV
RE1
RE2
START
PCB 03161
T28 104
A
B
C
D
E
F
1
2
3
4

SK3	A3	2812	B2	2834	A2	3815	D3	3838	A2	9800	A1
1851	D1	2813	D1	3800	A2	3816	B3	3839	A3	9801	E1
1853	A1	2814	E1	3801	D2	3817	D3	3840	A2	9802	D1
1856	E1	2815	E1	3804	C2	3818	B3	3893	B1	9803	D1
2800	C2	2816	E1	3805	A1	3819	B3	4812	C2	9804	D1
2801	D2	2817	C3	3806	C2	3820	A1	4813	D3	9805	B2
2803	C2	2818	D3	3807	C2	3821	B3	4814	D3	9806	A3
2806	C3	2819	B3	3808	C3	3822	A2	6800	A3	9809	D1
2807	D3	2820	A2	3810	E2	3823	A1	6801	A3		
2808	B2	2830	D3	3811	E1	3824	A1	6850	C3		
2809	C2	2831	A3	3812	E1	3835	A3	7800	D2		
2810	D2	2832	A3	3813	A3	3836	A3	7801	E2		
2811	C2	2833	A3	3814	B1	3837	A2	7803	B3		

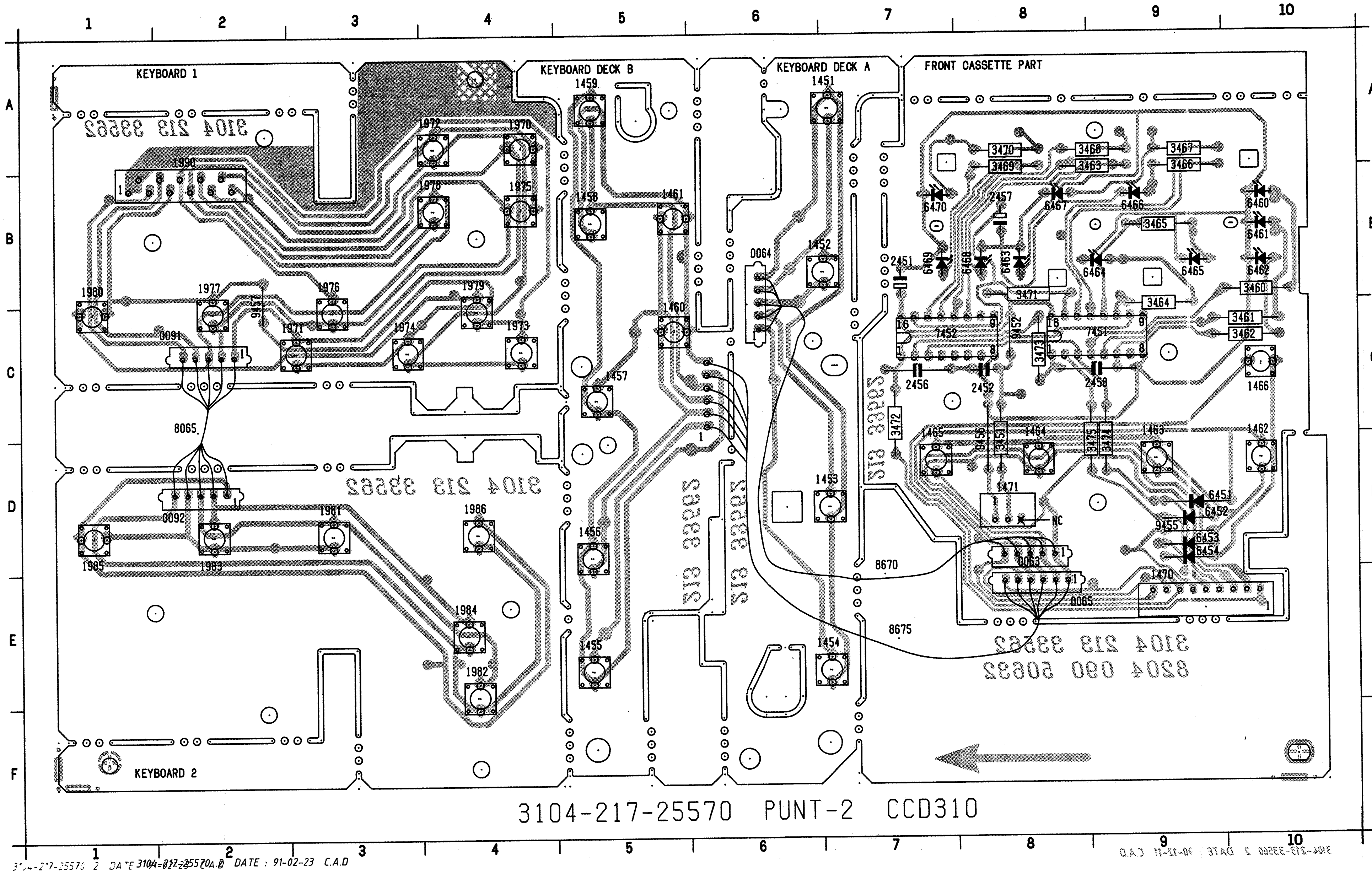

FOCUS OFFSET
LASER CURRENT
1853
1851
1856
7800
7803
7801
PCB 03160
T28/103
A
B
C
D
E
1
2
3



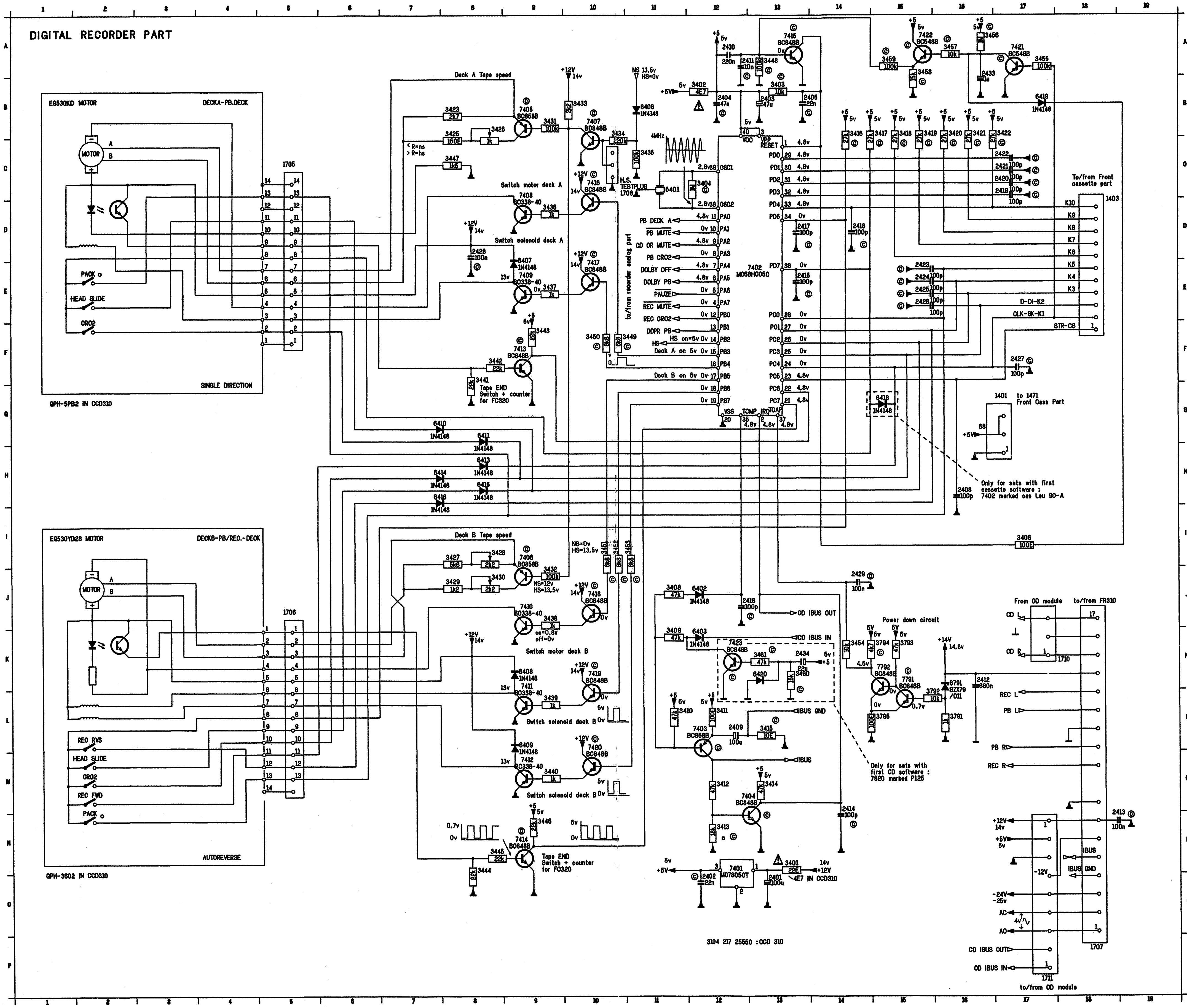
FRONT-CASSETTE PART

CD DUBBING
(DIRECTION)
REC
(REVERSE MODE)
CONT PLAY
NORMAL FAST
(DUBBING)
+5V
3451
2E2
5v
3471
10k
2451
4u7
2452
22n
7451
74HCT4094
D
CLK
STR
2458
470p
3460
3461
3462
3464
3465
3466
3467
270E
6460
6461
6462
6464
6465
6466
6467
CD DUBBING
REC
FAST
CONT-PLAY
NORMAL
STANDARD DIRECTION
REVERSE DIRECTION
2457
100u
7452
74HCT4094
3475
3474
3472
1k
3473
2456
470p
3463
3468
3469
3470
6463
6468
6469
6470
(REV MODE)
(REV MODE)
(REV MODE)
DOLBY
1462
1463
1464
1465
1466
DUB.FAST
DUBBING
DOLBY
REV.MODE
CD DUBBING
1451
1452
1453
1454
REWIND A
STOP A
PLAY A
WIND A
0064
0063
KEYBOARD DECK A
+5V
5v
1471
6454
6453
6452
6451
1N4148
D
CLK
STR
K9
K8
K7
K6
K4
K3
K2
K1
1470
To Recoder Digital part
0065
1455
1456
1457
1458
1459
REWIND B
STOP B
PLAY B
DIRECTION
WIND B
1460
PAUZE
1461
REC MUTE
KEYBOARD DECK B
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
K
L
M

1451	L 1
1452	L 2
1453	L 2
1454	L 3
1455	K13
1456	K14
1457	K14
1458	K15
1459	K16
1460	L14
1461	L15
1462	G 3
1463	G 4
1464	G 5
1465	G 5
1466	G 6
2451	B14
2452	B15
2456	I11
2457	F14
2458	E12
3451	B13
3460	C14
3461	C14
3462	C14
3463	H14
3464	D14
3465	E14
3466	E14
3467	E14
3468	H14
3469	I14
3470	I14
3471	B13
3472	H11
3473	H12
3474	H11
3475	H10
6451	L10
6452	L 9
6453	L 9
6454	L 8
6460	C15
6461	C15
6462	C15
6463	H15
6464	D15
6465	E15
6466	E15
6467	E15
6468	H15
6469	I15
6470	I15
7451	D13
7452	H13


KEYBOARD 1
KEYBOARD DECK B
KEYBOARD DECK A
FRONT CASSETTE PART
KEYBOARD 2
3104-217-25570 PUNT-2 CCD310
3104-217-25570 A.B DATE : 91-02-23 C.A.D
1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F

	0063	D 8	6453	D 9
	0064	B 6	6454	D 9
	0065	E 8	6460	B10
	0091	C 2	6461	B10
	0092	D 2	6462	B10
A	1451	A 7	6463	B 8
	1452	B 7	6464	B 9
	1453	D 7	6465	B 9
	1454	E 7	6466	B 9
	1455	E 5	6467	B 8
	1456	D 5	6468	B 8
	1457	C 5	6469	B 7
	1458	B 5	6470	B 7
	1459	A 5	7451	C 9
	1460	C 5	7452	C 7
B	1461	B 5	8065	C 2
	1462	D10	8670	D 7
	1463	D 9	8675	E 7
	1464	D 8	9452	C 8
	1465	D 7	9455	D 9
	1466	C10	9456	D 8
	1470	E 9	9457	B 2
	1471	D 8		
	1970	A 4		
	1971	C 3		
	1972	A 4		
C	1973	C 4		
	1974	C 3		
	1975	B 4		
	1976	B 3		
	1977	B 2		
	1978	B 4		
	1979	B 4		
	1980	B 1		
	1981	D 3		
	1982	E 4		
	1983	D 2		
D	1984	E 4		
	1985	D 1		
	1986	D 4		
	1990	A 2		
	2451	B 7		
	2452	C 8		
	2456	C 7		
	2457	B 8		
	2458	C 9		
	3451	D 8		
	3460	B10		
E	3461	C10		
	3462	C10		
	3463	B 9		
	3464	C 9		
	3465	B 9		
	3466	B 9		
	3467	A 9		
	3468	A 9		
	3469	B 8		
	3470	A 8		
	3471	B 8		
F	3472	C 7		
	3473	C 8		
	3474	D 9		
	3475	D 9		
	6451	D 9		
	6452	D 9		

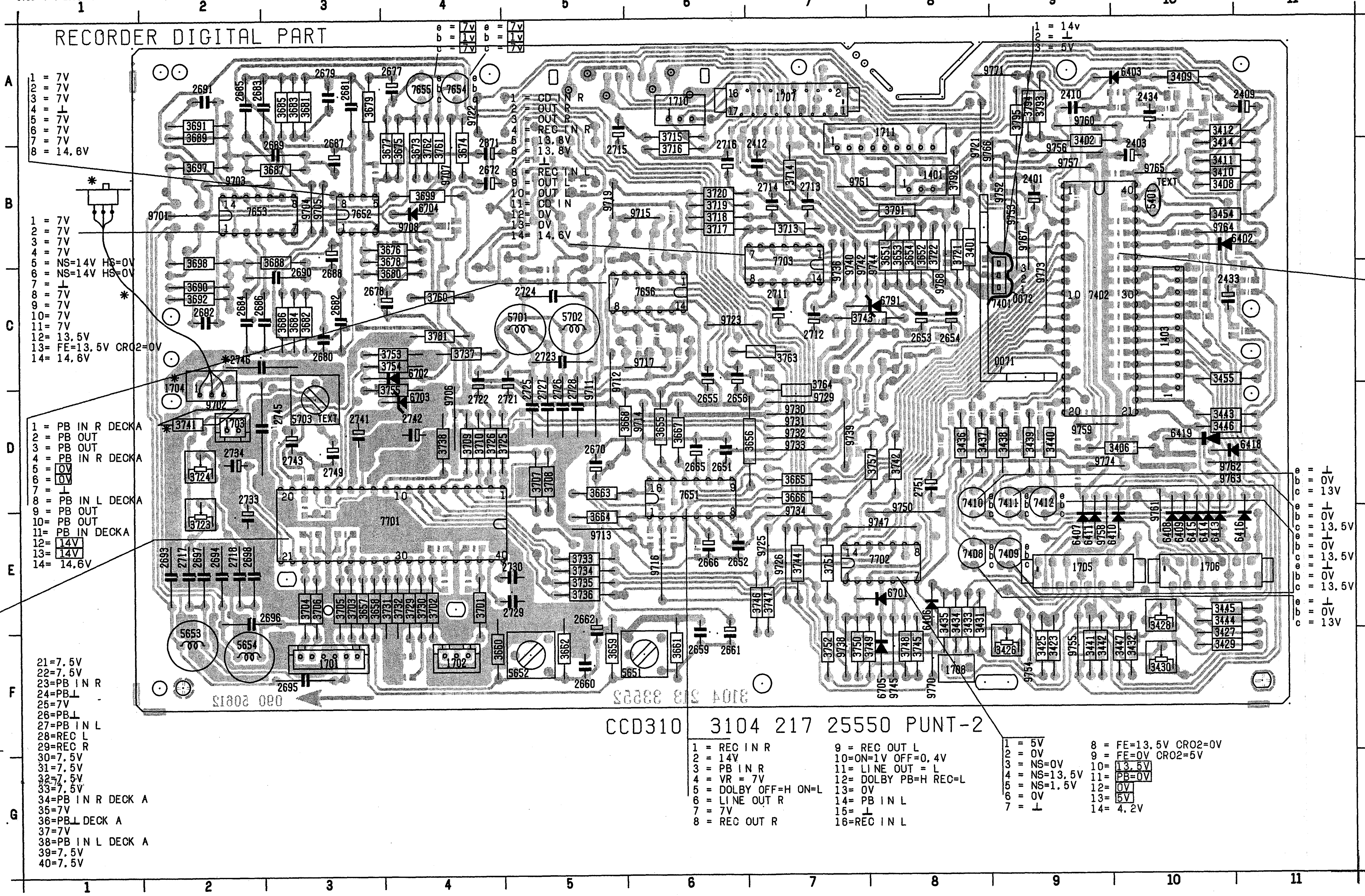

DIGITAL RECORDER PART
EG530KD MOTOR
DECKA-PB.DECK
MOTOR
PACK
HEAD SLIDE
CRO2
SINGLE DIRECTION
GPH-5PB2 IN CCD310
1705
Deck A Tape speed
7405 BC858B
7407 BC848B
Switch motor deck A
7408 BC338-40
7416 BC848B
Switch solenoid deck A
7409 BC338-40
7417 BC848B
7413 BC848B
Tape END Switch + counter for FC320
4MHz
H.S. TESTPLUG 1708
to/from recorder analog part
PB DECK A
PB MUTE
CD OR MUTE
PB CRO2
DOLBY OFF
DOLBY PB
PAUZE
REC MUTE
REC CRO2
DOPR PB
HS on=5v 0v
Deck A on 5v 0v
Deck B on 5v 0v
7402 MC68HC05C
VSS
TCMP
IRQ
TCAP
VDD
RESET
7415 BC848B
7422 BC858B
7421 BC858B
To/from Front cassette part
1403
K10
K9
K8
K7
K6
K5
K4
K3
D-DI-K2
CLK-SK-K1
STR-CS
1401 to 1471 Front Cass Part
Only for sets with first cassette software : 7402 marked css Leu 90-A
EG530YD28 MOTOR
DECKB-PB/REC.-DECK
REC RVS
REC FWD
AUTOREVERSE
GPH-3602 IN CCD310
1706
Deck B Tape speed
7406 BC858B
NS=0v HS=13.5v
7418 BC848B
7410 BC338-40
Switch motor deck B
7411 BC338-40
7419 BC848B
Switch solenoid deck B
7412 BC338-40
7420 BC848B
7414 BC848B
Tape END Switch + counter for FC320
CD IBUS OUT
CD IBUS IN
7423 BC848B
IBUS GND
IBUS
7403 BC858B
7404 BC848B
7401 MC78050T
4E7 IN CCD310
Power down circuit
7792 BC848B
7791 BC848B
BZX79 /C11
Only for sets with first CD software : 7820 marked P125
From CD module
to/from FR310
1710
REC L
PB L
PB R
REC R
1707
1711
to/from CD module
CD IBUS OUT
CD IBUS IN
3104 217 25550 : CCD 310

■■■■	L 2
■■■■	M 2
1	N17
1401	G17
1403	D18
1705	C 5
1706	J 5
1707	P18
1710	K18
1711	P17
2401	O13
2402	O12
2403	B13
2404	B12
2405	B13
2408	H16
2409	L12
2410	A12
2411	A12
2412	K16
2413	N19
2414	M14
2415	E13
2416	J12
2417	D13
2418	D14
2419	C17
2420	C17
2421	C17
2422	C17
2423	E15
2424	E15
2425	E15
2426	E15
2427	F17
2428	D 8
2429	J14
2433	A16
2434	K13
3401	N13
3402	B12
3403	B13
3404	C12
3406	I17
3408	J11
3409	K11
3410	L11
3411	L12
3412	M12
3413	N12
3414	M13
3415	L13
3416	B14
3417	B14
3418	B15
3419	B15
3420	B16
3421	B16
3422	B16
3423	B 8
3425	B 8
3427	I 8
3429	J 8
3431	B 9
3432	J 9
3433	B10
3434	B10
3435	C11
3436	D 9
3437	E 9
3438	J 9
3439	L 9
3440	M 9
3441	F 8
3442	F 8
3443	F 9
3444	N 8
3445	N 8
3446	N 9
3447	C 8
3448	A13
3449	F10
3450	F10
3451	I10
3452	I10
3453	I11
3454	K14
3455	A17
3456	A16
3457	A16
3458	A15
3459	A15
3460	K13
3461	K13
3791	L16
3792	L16
3793	K15
3794	K14
3795	L14
5401	C11
6402	J12
6403	K12
6406	B11
6407	D 9
6408	K 9
6409	L 9
6410	G 8
6411	G 8
6413	H 8
6414	H 8
6415	H 8
6416	H 8
6418	G15
6419	B17
6420	K13
6791	K16
7401	N12
7402	E13
7403	L12
7404	M13
7405	B 9
7406	I 9
7407	B10
7408	C 9
7409	E 9
7410	J 9
7411	K 9
7412	M 9
7413	F 9
7414	N 9
7415	A13
7416	C10
7417	E10
7418	J10
7419	K10
7420	L10
7421	A17
7422	A15
7423	K12
7791	K15
7792	K15
CR02	M 2
CR02	E 2
HEAD	M 2
HEAD	E 2
PACK	M 2
PACK	E 2
REC	M 2
REC	L 2

0071	C 9	1710	A 6	2654	C 8	2677	A 4	2689	B 3	2713	B 7	2727	D 5	2751	D 8	3426	F 9	3438	D 9	3651	B 8	3663	D 5	3679	A 3	3691	A 2	3708	D 5	3722	B 8	3736	E 5	3750	F 7	3781	C 4	5702	C 5	6415	E10	7408	E 8	7702	E 8	9713	E 5	9730	D 7	9747	E 8	9761	E10
0072	C 9	1711	A 8	2655	D 6	2678	C 3	2690	C 3	2714	B 7	2728	D 5	3401	B 8	3427	F10	3439	D 9	3652	B 8	3664	E 5	3680	C 4	3692	C 2	3709	D 4	3723	E 2	3737	C 4	3751	E 7	3791	B 8	5703	D 3	6416	E11	7409	E 9	7703	C 7	9714	D 6	9731	D 7	9750	E 8	9762	D10
1401	B 8	2401	B 9	2656	D 6	2679	A 3	2691	A 2	2715	B 5	2729	E 5	3402	B 9	3428	F10	3440	D 9	3653	B 8	3665	D 7	3681	A 3	3697	B 2	3710	D 4	3724	D 2	3738	D 4	3752	F 7	3792	B 8	6402	B11	6418	D11	7410	E 8	9701	B 2	9715	B 6	9732	D 7	9751	B 7	9763	D10
1403	C10	2403	B10	2659	F 6	2680	C 3	2692	C 2	2716	B 6	2730	E 5	3406	D10	3429	F10	3441	F 9	3654	B 8	3666	D 7	3682	C 3	3698	B 2	3713	B 7	3725	D 5	3741	D 2	3753	C 4	3793	A 9	6403	A10	6419	D10	7411	E 9	9702	D 2	9716	E 6	9733	D 7	9752	B 9	9764	B10
1701	F 3	2409	A11	2660	F 5	2681	A 3	2693	E 2	2717	E 2	2733	D 2	3408	B10	3430	F10	3442	F 9	3655	D 6	3667	D 6	3683	A 3	3699	B 4	3714	B 7	3726	D 4	3742	D 8	3754	C 4	3794	A 9	6406	E 8	6701	E 8	7412	E 9	9703	B 2	9717	C 6	9734	E 7	9753	B 9	9765	B10
1702	F 4	2410	A 9	2661	F 6	2682	C 3	2694	E 2	2718	E 2	2734	D 2	3409	A10	3431	E 8	3443	D10	3656	D 7	3668	D 6	3684	C 3	3701	E 4	3715	A 6	3729	E 4	3743	C 7	3755	D 4	3795	A 9	6407	E 9	6702	C 4	7651	D 6	9704	B 3	9719	B 5	9736	C 7	9754	F 9	9766	B 9
1703	D 2	2412	B 7	2662	E 5	2683	A 3	2695	F 3	2721	D 5	2741	D 3	3410	B10	3432	F10	3444	E10	3657	E 3	3673	B 4	3685	A 3	3702	E 4	3716	B 6	3730	E 4	3744	E 7	3757	D 8	5401	B10	6408	E10	6703	D 4	7652	B 3	9705	B 3	9721	B 8	9738	F 7	9755	F 9	9767	B 9
1704	D 2	2433	C10	2665	D 6	2684	C 2	2696	E 3	2722	D 4	2742	D 4	3411	B10	3433	E 8	3445	E10	3658	E 3	3674	B 4	3686	C 3	3703	E 3	3717	B 6	3731	E 4	3745	F 8	3760	C 4	5651	F 6	6409	E10	6704	B 4	7653	B 2	9706	D 4	9722	A 4	9739	D 7	9756	B 9	9768	C 8
1705	E 9	2434	A10	2666	E 6	2685	A 2	2697	E 2	2723	C 5	2743	D 3	3412	A10	3434	E 8	3446	D10	3659	F 5	3675	B 4	3687	B 3	3704	E 3	3718	B 6	3732	E 4	3746	E 7	3761	B 4	5652	F 5	6410	E10	6705	F 8	7654	A 4	9707	B 4	9723	C 6	9740	C 7	9757	B 9	9770	F 8
1706	E10	2651	D 6	2670	D 5	2686	C 3	2698	E 2	2724	C 5	2745	D 3	3414	B10	3435	E 8	3447	F10	3660	F 4	3676	B 4	3688	B 3	3705	E 3	3719	B 6	3733	E 5	3747	E 7	3762	B 4	5653	F 2	6411	E 9	6791	C 8	7655	A 4	9708	B 4	9725	E 7	9742	C 7	9758	E 9	9771	A 9
1707	A 7	2652	E 6	2671	B 4	2687	A 3	2711	C 7	2725	D 5	2746	C 2	3423	F 9	3436	D 8	3454	B10	3661	F 6	3677	B 4	3689	A 2	3706	E 3	3720	B 6	3734	E 5	3748	F 8	3763	C 7	5654	F 2	6413	E10	7401	C 9	7656	C 6	9711	D 5	9726	E 7	9744	C 8	9759	D 9	9773	C 9
1708	F 8	2653	C 8	2672	B 4	2688	C 3	2712	C 7	2726	D 5	2749	D 3	3425	F 9	3437	D 8	3455	C10	3662	F 5	3678	B 4	3690	C 2	3707	D 5	3721	B 8	3735	E 5	3749	F 8	3764	D 7	5701	C 5	6414	E10	7402	C 9	7701	E 4	9712	C 5	9729	D 7	9745	F 8	9760	A 9	9774	D 9

2402	B 3	2413	A 5	2417	B 2	2422	C
2404	B 2	2414	B 2	2418	C 2	2423	C
2405	A 2	2414	B 2	2419	C 2	2424	C
2408	D 2	2415	B 2	2420	C 2	2425	C
2411	A 2	2416	B 2	2421	C 2	2426	C

RECORDER DIGITAL PART



e = 7v
b = 1v
c = 7v

e = 7v
b = 1v
c = 7v

1 = 7V
2 = 7V
3 = 7V
4 = ⊥
5 = 7V
6 = 7V
7 = 7V
8 = 14.6V

1 = 7V
2 = 7V
3 = 7V
4 = 7V
5 = NS=14V HS=0V
6 = NS=14V HS=0V
7 = ⊥
8 = 7V
9 = 7V
10= 7V
11= 7V
12= 13.5V
13= FE=13.5V CRO2=0V
14= 14.6V

1 = PB IN R DECKA
2 = PB OUT
3 = PB OUT
4 = PB IN R DECKA
5 = 0V
6 = 0V
7 = ⊥
8 = PB IN L DECKA
9 = PB OUT
10= PB OUT
11= PB IN DECKA
12= 14V
13= 14V
14= 14.6V

1 = CD IN R
2 = OUT R
3 = OUT R
4 = REC IN R
5 = 13.8V
6 = 13.8V
7 = ⊥
8 = REC IN L
9 = OUT L
10= OUT L
11= CD IN
12= 0V
13= 0V
14= 14.6V

1 = 14v
2 = ⊥
3 = 5V

1 = 4.8V
2 = 4.8V
3 = 5V
4 = 0V
5 = 0V
6 = 4.8V
7 = 4.8V
8 = 0V
9 = 4.8V
10 = 0V
11 = 4.8V
12 = 0V
13 = 4.8V
14 = 0V
15 = 0V
16 = 0V
17 = 0V
18 = 0V
19 = 0V
20 = ⊥
21 = 4.8V
22 = 4.8V
23 = 4.8V
24 = 0V
25 = 0V
26 = 0V
27 = 0V
28 = 0V
29 = 4.8V
30 = 4.8V
31 = 4.8V
32 = 4.8V
33 = 4.8V
34 = 0V
35 = 4.8V
36 = 0V
37 = 4.8V
38 = 2.9V
39 = 2.6V
40 = 5V

e = ⊥
b = 0V
c = 13V

e = ⊥
b = 0V
c = 13.5V

e = ⊥
b = 0V
c = 13.5V

e = ⊥
b = 0V
c = 13.5V

e = ⊥
b = 0V
c = 13V

1 = PB OUT L
2 = PB OUT R
3 = LINE IN R
4 = 7V
5 = 7V
6 = LINE IN L
7 = 0V
8 = 14V
9 = FE=H/CRO2=L
10=PB=0V
11=0.3V
12=7V
13= ⊥
14=14.5V
15=9.6V
16=OSC
17= ⊥
18=OSC
19=0.6V
20=14V

21=7.5V
22=7.5V
23=PB IN R
24=PB⊥
25=7V
26=PB⊥
27=PB IN L
28=REC L
29=REC R
30=7.5V
31=7.5V
32=7.5V
33=7.5V
34=PB IN R DECK A
35=7V
36=PB⊥ DECK A
37=7V
38=PB IN L DECK A
39=7.5V
40=7.5V

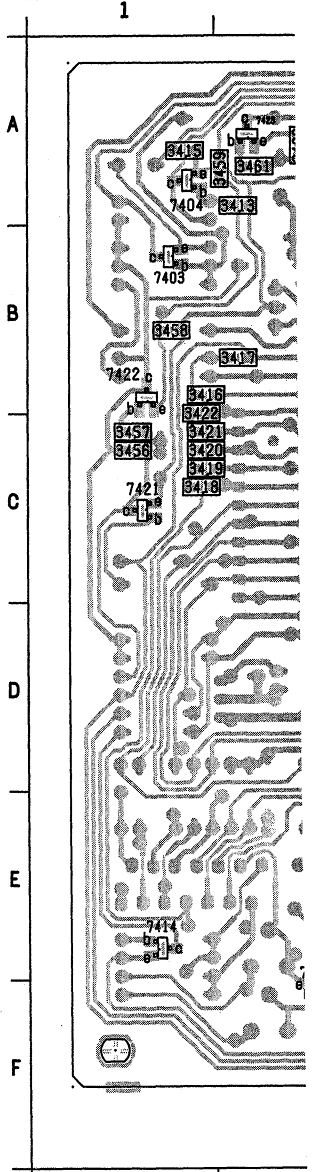
CCD310 3104 217 25550 PUNT-2

1 = REC IN R
2 = 14V
3 = PB IN R
4 = VR = 7V
5 = DOLBY OFF=H ON=L
6 = LINE OUT R
7 = 7V
8 = REC OUT R

9 = REC OUT L
10=ON=1V OFF=0.4V
11= LINE OUT = L
12= DOLBY PB=H REC=L
13= 0V
14= PB IN L
15= ⊥
16=REC IN L

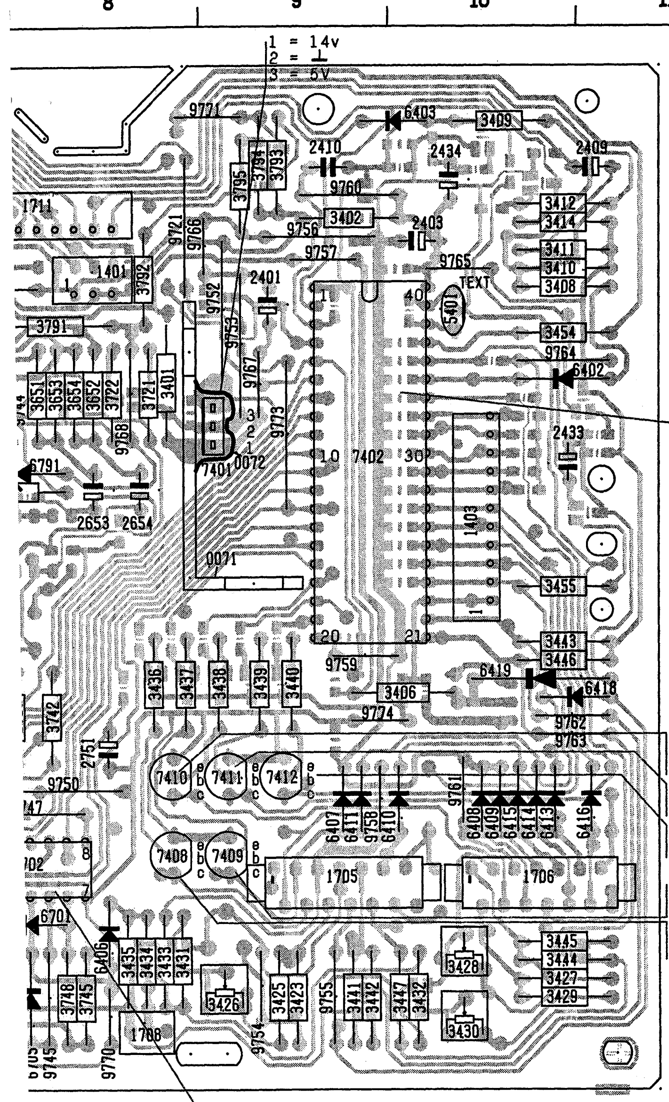
1 = 5V
2 = 0V
3 = NS=0V
4 = NS=13.5V
5 = NS=1.5V
6 = 0V
7 = ⊥

8 = FE=13.5V CRO2=0V
9 = FE=0V CRO2=5V
10= 13.5V
11= PB=0V
12= 0V
13= 5V
14= 4.2V



3104-217-25550 .2 DATE : 91-02-14 C.A.D

81	C 4	5702	C 5	6415	E10	7408	E 8	7702	E 8	9713	E 5	9730	D 7	9747	E 8	9761	E10
91	B 8	5703	D 3	6416	E11	7409	E 9	7703	C 7	9714	D 6	9731	D 7	9750	E 8	9762	D10
92	B 8	6402	B11	6418	D11	7410	E 8	9701	B 2	9715	B 6	9732	D 7	9751	B 7	9763	D10
93	A 9	6403	A10	6419	D10	7411	E 9	9702	D 2	9716	E 6	9733	D 7	9752	B 9	9764	B10
94	A 9	6406	E 8	6701	E 8	7412	E 9	9703	B 2	9717	C 6	9734	E 7	9753	B 9	9765	B10
95	A 9	6407	E 9	6702	C 4	7651	D 6	9704	B 3	9719	B 5	9736	C 7	9754	F 9	9766	B 9
01	B10	6408	E10	6703	D 4	7652	B 3	9705	B 3	9721	B 8	9738	F 7	9755	F 9	9767	B 9
51	F 6	6409	E10	6704	B 4	7653	B 2	9706	D 4	9722	A 4	9739	D 7	9756	B 9	9768	C 8
52	F 5	6410	E10	6705	F 8	7654	A 4	9707	B 4	9723	C 6	9740	C 7	9757	B 9	9770	F 8
53	F 2	6411	E 9	6791	C 8	7655	A 4	9708	B 4	9725	E 7	9742	C 7	9758	E 9	9771	A 9
54	F 2	6413	E10	7401	C 9	7656	C 6	9711	D 5	9726	E 7	9744	C 8	9759	D 9	9773	C 9
1	C 5	6414	E10	7402	C 9	7701	E 4	9712	C 5	9729	D 7	9745	F 8	9760	A 9	9774	D 9


8
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0072
0071
7402
1403
2410
9760
3402
2403
2401
9765
TEXT
5401
3409
6403
2434
2409
3412
3414
3411
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3408
3454
9764
6402
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9774
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9763
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3742
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9750
7410
7411
7412
7408
7409
1705
1706
9761
6407
6411
9758
6410
6408
6409
6415
6414
6413
6416
2653
2654
6791
3651
3653
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3652
3722
3721
3401
9768
3435
3434
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3431
3748
3745
6426
1708
3425
3423
9755
3441
3442
3447
3432
3428
3430
3445
3444
3427
3429
9754
9745
9770

1 = 14v
2 = ⊥
3 = 5V

1 = 4.8V
2 = 4.8V
3 = 5V
4 = 0V
5 = 0V
6 = 4.8V
7 = 4.8V
8 = 0V
9 = 4.8V
10 = 0V
11 = 4.8V
12 = 0V
13 = 4.8V
14 = 0V
15 = 0V
16 = 0V
17 = 0V
18 = 0V
19 = 0V
20 = ⊥
21 = 4.8V
22 = 4.8V
23 = 4.8V
24 = 0V
25 = 0V
26 = 0V
27 = 0V
28 = 0V
29 = 4.8V
30 = 4.8V
31 = 4.8V
32 = 4.8V
33 = 4.8V
34 = 0V
35 = 4.8V
36 = 0V
37 = 4.8V
38 = 2.9V
39 = 2.6V
40 = 5V

e = ⊥
b = 0V
c = 13V

e = ⊥
b = 0V
c = 13.5V

e = ⊥
b = 0V
c = 13.5V

e = ⊥
b = 0V
c = 13.5V

e = ⊥
b = 0V
c = 13V

0 PUNT-2

OUT L
V OFF=0.4V
E OUT = L
BY PB=H REC=L

IN L

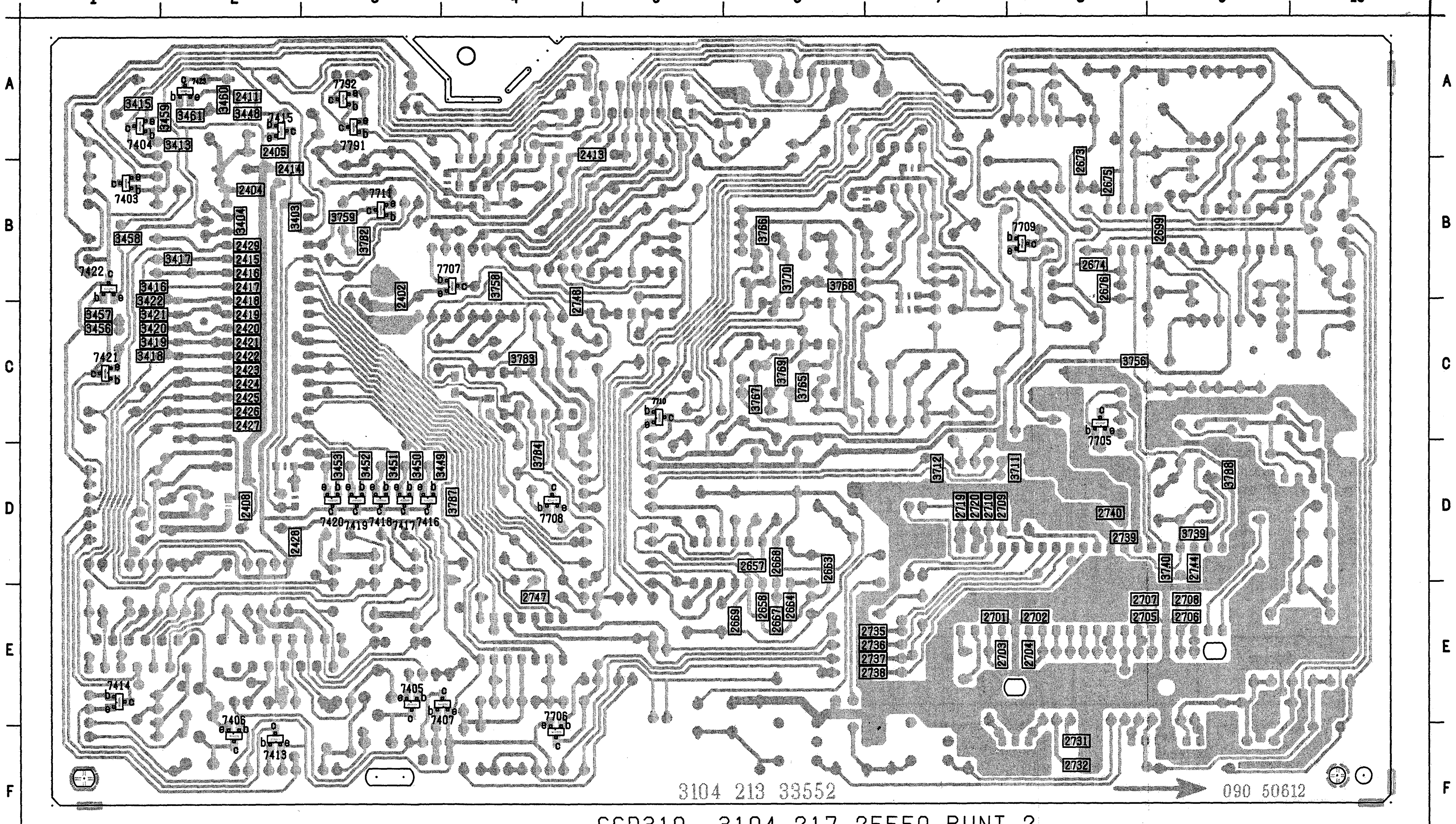
IN L

1 = 5V
2 = 0V
3 = NS=0V
4 = NS=13.5V
5 = NS=1.5V
6 = 0V
7 = ⊥

8 = FE=13.5V CRO2=0V
9 = FE=0V CRO2=5V
10= 13.5V
11= PB=0V
12= 0V
13= 5V
14= 4.2V

8 9 10 11

2402	B 3	2413	A 5	2417	B 2	2422	C 2	2427	C 2	2663	D 6	2673	B 8	2701	E 7	2706	E 9	2719	D 7	2736	E 7	2744	D 9	3413	A 2	3419	C 1	3449	D 3	3456	C 1	3461	A 2	3756	C 8	3767	C 6	3783	C 4	7404	A 1	7414	E 1	7419	D 3	7705	D 8	7710	C 5
2404	B 2	2414	B 2	2418	C 2	2423	C 2	2428	D 2	2664	E 6	2674	B 8	2702	E 8	2707	E 9	2720	D 7	2737	E 7	2747	E 4	3415	A 1	3420	C 1	3450	D 3	3457	C 1	3711	D 8	3758	B 4	3768	B 6	3784	D 4	7405	E 3	7415	A 2	7420	D 3	7706	E 4	7711	B 3
2405	A 2	2414	B 2	2419	C 2	2424	C 2	2429	B 2	2667	E 6	2675	B 8	2703	E 7	2708	E 9	2731	F 8	2738	E 7	2748	C 4	3416	B 1	3421	C 1	3451	D 3	3458	B 1	3712	D 7	3759	B 3	3769	C 6	3787	D 4	7406	E 2	7416	D 3	7421	C 1	7707	B 4	7791	A 3
2408	D 2	2415	B 2	2420	C 2	2425	C 2	2657	D 6	2668	D 6	2676	B 8	2704	E 8	2709	D 7	2732	F 8	2739	D 8	3403	B 2	3417	B 2	3422	B 1	3452	D 3	3459	A 2	3739	D 9	3765	C 6	3770	B 6	3788	D 9	7407	E 4	7417	D 3	7422	B 1	7708	D 4	7792	A 3
2411	A 2	2416	B 2	2421	C 2	2426	C 2	2658	E 6	2669	E 6	2699	B 9	2705	E 9	2710	D 7	2735	E 7	2740	D 8	3404	B 2	3418	C 1	3448	A 2	3453	D 3	3460	A 2	3740	D 9	3766	B 6	3782	B 3	7403	B 1	7413	F 2	7418	D 3	7423	A 2	7709	B 8		


1
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7
8
9
10
A
B
C
D
E
F
3104 213 33552
090 50612

CCD310 3104 217 25550 PUNT-2

3104-217-25550 .2 DATE : 91-02-14 C.A.D

Adjustment table Recorder part

Adjustment	Cassette	Recorder	Measure on ◇	Read on	Adjust with	to
Motor speed High speed 1)	SBC 420 3150 Hz	PLAY Deck A PLAY Deck B	1 or 2 or Speaker out	Frequency Counter	check only 3428	f_{HS1} = 6000 Hz ± 10% f_{HS2} = f_{HS1} ±1%
Normal speed		PLAY Deck A PLAY Deck B			3426 3430	3150 Hz ± 1% 3150 Hz ± 1%
Wow & Flutter	SBC 420 3150 Hz	PLAY Deck A PLAY Deck B		Wow & Flutter meter	check only	≤ 0,3%
Azimuth 2)	SBC 420 10 kHz	PLAY Deck A PLAY Deck B		mV-meter	Right hand screw (normal direction) Left hand screw (reverse direction) Left hand screw	max. output left=right

1) For High Speed during play connect B of 7407 to GND. Use the testplug 1708. See Figure 1.

2) For adjustment of azimuth remove the PLAY button for Deck B and the STOP button for Deck A.

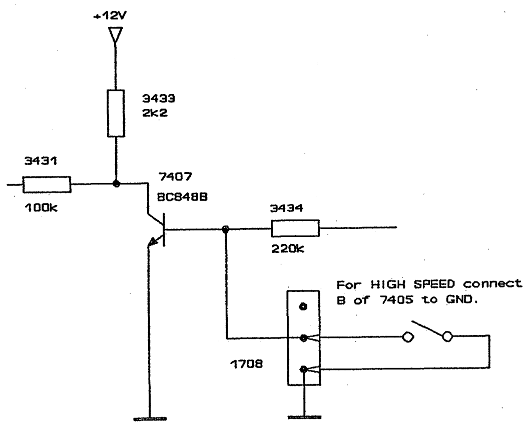

+12V
3433
2k2
3431
100k
7407
BC848B
3434
220k
For HIGH SPEED connect B of 7405 to GND.
1708

Fig. 1

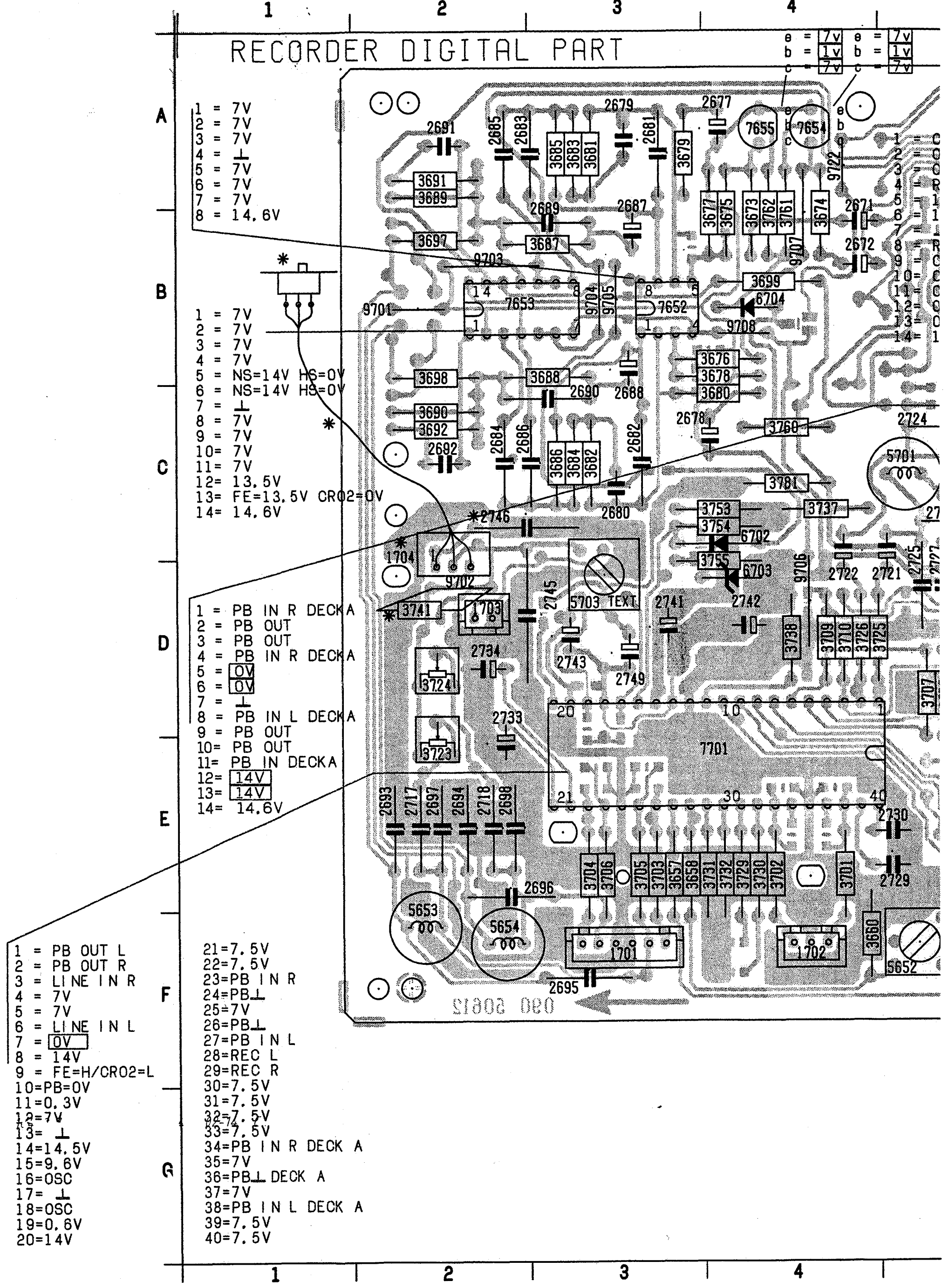
Adjustment	Source ◇	Recorder	Measure on ◇	Read on	Adjust width	to
Playback Sensitivity	Dolby reference level cassette 200 nW/m	PLAY both decks	1 for left channel 2 for right channel	V meter	Check only	775 mV ± 2 dB
Recording Sensitivity 3)	500 mV/ 315 Hz left : 3 right : 4	REC Deck B Dolby off CrO_2	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.	V meter	Check only	U_{CrO2}= 2,1mV ±2dB 4)
	500 mV/ 315 Hz left : 3 right : 4	Fe	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.			U_{Fe}= U_{CrO2}-3,5dB ±1dB
Bias	-	REC Deck B CrO_2	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.	V meter	3723 left 3724 right	U_{CrO2} = 14,5 mV 5) U_{CrO2} = 14,5 mV
		Fe	5 ↔ 6 for left Ch. 7 ↔ 8 for right Ch.		Check only	U_{Fe}= U_{CrO2}-3,5dB ±1dB
Erase Oscillator	-	REC Deck B	Erase head	V meter Counter	Check only	CrO_2 33V ± 5V Fe 22V ± 4V f=80kHz ±6kHz

3) For measuring the Recording sensitivity use a low pass filter to attenuate the bias component.

4) Make a record and check if recorded signal gives 775 mV on ◇1 and ◇2 in playback. Distortion ≤3%.

5) If sensitivity, distortion or frequency response (see specification) are wrong, then readjust bias and check again.

0071	C 9	1710	A 6	2654	C 8	2677	A 4	2689	B 3	2713	B 7	2727	D 5	2751	D 8	3426	F 9	3438	D 9	3651	B 8	366	
0072	C 9	1711	A 8	2655	D 6	2678	C 3	2690	C 3	2714	B 7	2728	D 5	3401	B 8	3427	F10	3439	D 9	3652	B 8	366	
1401	B 8	2401	B 9	2656	D 6	2679	A 3	2691	A 2	2715	B 5	2729	E 5	3402	B 9	3428	F10	3440	D 9	3653	B 8	366	
1403	C10	2403	B10	2659	F 6	2680	C 3	2692	C 2	2716	B 6	2730	E 5	3406	D10	3429	F10	3441	F 9	3654	B 8	366	
1701	F 3	2409	A11	2660	F 5	2681	A 3	2693	E 2	2717	E 2	2733	D 2	3408	B10	3430	F10	3442	F 9	3655	D 6	366	
1702	F 4	2410	A 9	2661	F 6	2682	C 3	2694	E 2	2718	E 2	2734	D 2	3409	A10	3431	E 8	3443	D10	3656	D 7	366	
1703	D 2	2412	B 7	2662	E 5	2683	A 3	2695	F 3	2721	D 5	2741	D 3	3410	B10	3432	F10	3444	E10	3657	E 3	367	
1704	D 2	2433	C10	2665	D 6	2684	C 2	2696	E 3	2722	D 4	2742	D 4	3411	B10	3433	E 8	3445	E10	3658	E 3	367	
1705	E 9	2434	A10	2666	E 6	2685	A 2	2697	E 2	2723	C 5	2743	D 3	3412	A10	3434	E 8	3446	D10	3659	F 5	367	
1706	E10	2651	D 6	2670	D 5	2686	C 3	2698	E 2	2724	C 5	2745	D 3	3414	B10	3435	E 8	3447	F10	3660	F 4	367	
1707	A 7	2652	E 6	2671	B 4	2687	A 3	2711	C 7	2725	D 5	2746	C 2	3423	F 9	3436	D 8	3454	B10	3661	F 6	367	
1708	F 8	2653	C 8	2672	B 4	2688	C 3	2712	C 7	2726	D 5	2749	D 3	3425	F 9	3437	D 8	3455	C10	3662	F 5	367	


RECORDER DIGITAL PART
1
2
3
4
A
B
C
D
E
F
G
e = 7v
b = 1v
c = 7v
e = 7v
b = 1v
c = 7v
1 = 7V
2 = 7V
3 = 7V
4 = ⊥
5 = 7V
6 = 7V
7 = 7V
8 = 14.6V
1 = 7V
2 = 7V
3 = 7V
4 = 7V
5 = NS=14V HS=0V
6 = NS=14V HS=0V
7 = ⊥
8 = 7V
9 = 7V
10= 7V
11= 7V
12= 13.5V
13= FE=13.5V CRO2=0V
14= 14.6V
1 = PB IN R DECKA
2 = PB OUT
3 = PB OUT
4 = PB IN R DECKA
5 = 0V
6 = 0V
7 = ⊥
8 = PB IN L DECKA
9 = PB OUT
10= PB OUT
11= PB IN DECKA
12= 14V
13= 14V
14= 14.6V
1 = PB OUT L
2 = PB OUT R
3 = LINE IN R
4 = 7V
5 = 7V
6 = LINE IN L
7 = 0V
8 = 14V
9 = FE=H/CRO2=L
10=PB=0V
11=0.3V
12=7V
13= ⊥
14=14.5V
15=9.6V
16=OSC
17= ⊥
18=OSC
19=0.6V
20=14V
21=7.5V
22=7.5V
23=PB IN R
24=PB⊥
25=7V
26=PB⊥
27=PB IN L
28=REC L
29=REC R
30=7.5V
31=7.5V
32=7.5V
33=7.5V
34=PB IN R DECK A
35=7V
36=PB⊥ DECK A
37=7V
38=PB IN L DECK A
39=7.5V
40=7.5V
*
2691
2685
2683
3685
3683
3681
2679
2681
3679
2677
7655
7654
9722
3691
3689
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2684
2686
3686
3684
3682
2692
2678
3760
2724
5701
3781
3737
*2746
2680
3753
3754
6702
1704
9702
3755
6703
9706
2722
2721
2725
*3741
1703
2745
5703 TEXT
2741
2742
3738
3709
3710
3726
3725
3707
2734
3724
2743
2749
2733
3723
20
10
7701
21
30
40
2693
2717
2697
2694
2718
2698
2730
2729
3704
3706
3705
3703
3657
3658
3731
3729
3730
3702
3701
5653
5654
2696
1701
1702
3660
5652
2695

* Only if the Service Solution for **RIF** - Switch is required

2746	560 pF Polypropylen	
3741	1 kΩ	0,25W
Switch	4822 277 21514	

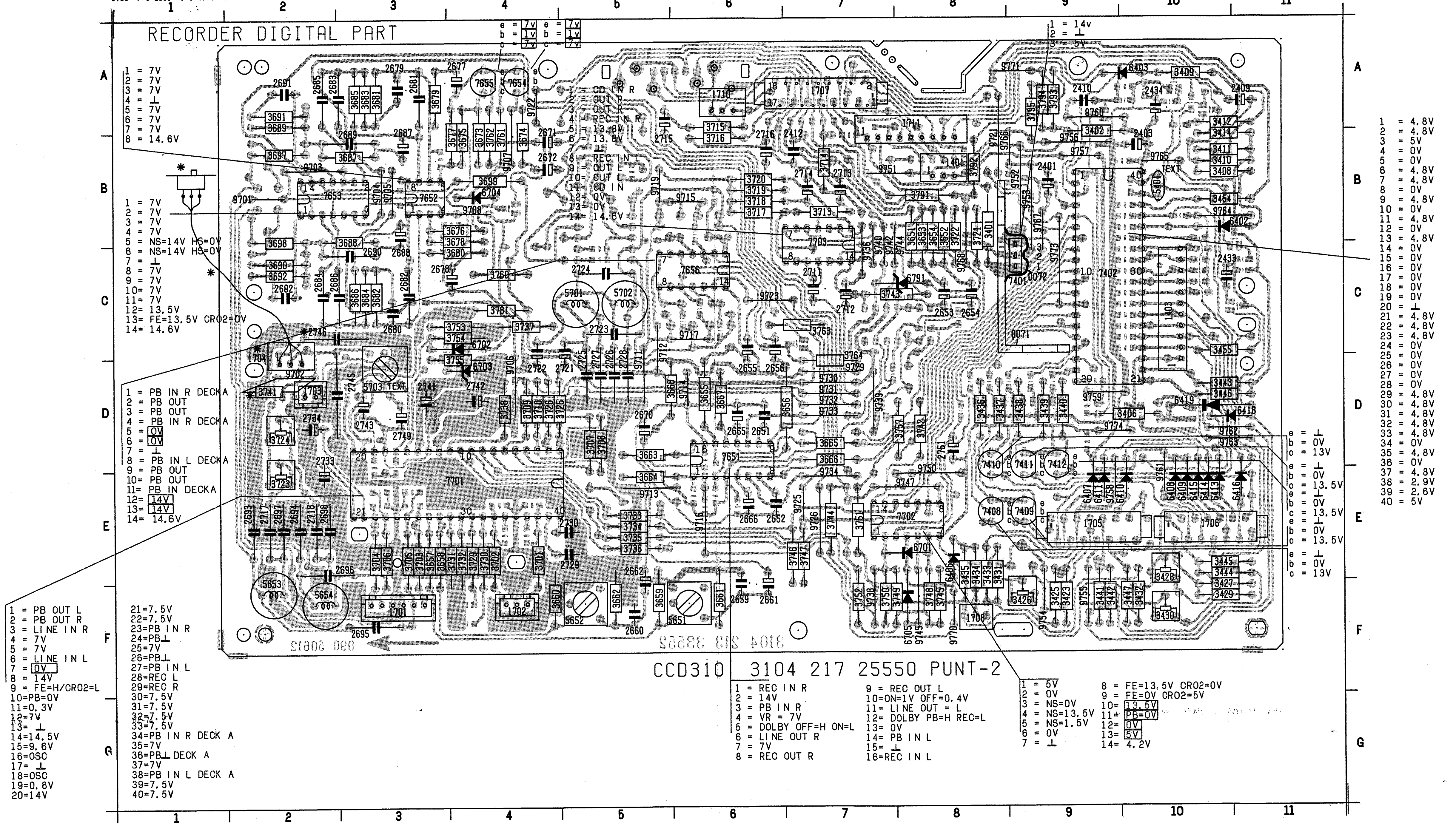
Delete bridge wire 9702

ervice Solution for
is required

Polypropylen
0,25W
7 21514

ridge wire 9702

0071	C 9	1710	A 6	2654	C 8	2677	A 4	2689	B 3	2713	B 7	2727	D 5	2751	D 8	3426	F 9	3438	D 9	3651	B 8	3663	D 5	3679	A 3	3691	A 2	3708	D 5	3722	B 8	3736	E 5	3750	F 7	3781	C 4	5702	C 5	6415	E10	7408	E 8	7702	E 8	9713	E 5	9730	D 7	9747	E 8	9761	E10
0072	C 9	1711	A 8	2655	D 6	2678	C 3	2690	C 3	2714	B 7	2728	D 5	3401	B 8	3427	F10	3439	D 9	3652	B 8	3664	E 5	3680	C 4	3692	C 2	3709	D 4	3723	E 2	3737	C 4	3751	E 7	3791	B 8	5703	D 3	6416	E11	7409	E 9	7703	C 7	9714	D 6	9731	D 7	9750	E 8	9762	D10
1401	B 8	2401	B 9	2656	D 6	2679	A 3	2691	A 2	2715	B 5	2729	E 5	3402	B 9	3428	F10	3440	D 9	3653	B 8	3665	D 7	3681	A 3	3697	B 2	3710	D 4	3724	D 2	3738	D 4	3752	F 7	3792	B 8	6402	B11	6418	D11	7410	E 8	9701	B 2	9715	B 6	9732	D 7	9751	B 7	9763	D10
1403	C10	2403	B10	2659	F 6	2680	C 3	2692	C 2	2716	B 6	2730	E 5	3406	D10	3429	F10	3441	F 9	3654	B 8	3666	D 7	3682	C 3	3698	B 2	3713	B 7	3725	D 5	3741	D 2	3753	C 4	3793	A 9	6403	A10	6419	D10	7411	E 9	9702	D 2	9716	E 6	9733	D 7	9752	B 9	9764	B10
1701	F 3	2409	A11	2660	F 5	2681	A 3	2693	E 2	2717	E 2	2733	D 2	3408	B10	3430	F10	3442	F 9	3655	D 6	3667	D 6	3683	A 3	3699	B 4	3714	B 7	3726	D 4	3742	D 8	3754	C 4	3794	A 9	6406	E 8	6701	E 8	7412	E 9	9703	B 2	9717	C 6	9734	E 7	9753	B 9	9765	B10
1702	F 4	2410	A 9	2661	F 6	2682	C 3	2694	E 2	2718	E 2	2734	D 2	3409	A10	3431	E 8	3443	D10	3656	D 7	3668	D 6	3684	C 3	3701	E 4	3715	A 6	3729	E 4	3743	C 7	3755	D 4	3795	A 9	6407	E 9	6702	C 4	7651	D 6	9704	B 3	9719	B 5	9736	C 7	9754	F 9	9766	B 9
1703	D 2	2412	B 7	2662	E 5	2683	A 3	2695	F 3	2721	D 5	2741	D 3	3410	B10	3432	F10	3444	E10	3657	E 3	3673	B 4	3685	A 3	3702	E 4	3716	B 6	3730	E 4	3744	E 7	3757	D 8	5401	B10	6408	E10	6703	D 4	7652	B 3	9705	B 3	9721	B 8	9738	F 7	9755	F 9	9767	B 9
1704	D 2	2433	C10	2665	D 6	2684	C 2	2696	E 3	2722	D 4	2742	D 4	3411	B10	3433	E 8	3445	E10	3658	E 3	3674	B 4	3686	C 3	3703	E 3	3717	B 6	3731	E 4	3745	F 8	3760	C 4	5651	F 6	6409	E10	6704	B 4	7653	B 2	9706	D 4	9722	A 4	9739	D 7	9756	B 9	9768	C 8
1705	E 9	2434	A10	2666	E 6	2685	A 2	2697	E 2	2723	C 5	2743	D 3	3412	A10	3434	E 8	3446	D10	3659	F 5	3675	B 4	3687	B 3	3704	E 3	3718	B 6	3732	E 4	3746	E 7	3761	B 4	5652	F 5	6410	E10	6705	F 8	7654	A 4	9707	B 4	9723	C 6	9740	C 7	9757	B 9	9770	F 8
1706	E10	2651	D 6	2670	D 5	2686	C 3	2698	E 2	2724	C 5	2745	D 3	3414	B10	3435	E 8	3447	F10	3660	F 4	3676	B 4	3688	B 3	3705	E 3	3719	B 6	3733	E 5	3747	E 7	3762	B 4	5653	F 2	6411	E 9	6791	C 8	7655	A 4	9708	B 4	9725	E 7	9742	C 7	9758	E 9	9771	A 9
1707	A 7	2652	E 6	2671	B 4	2687	A 3	2711	C 7	2725	D 5	2746	C 2	3423	F 9	3436	D 8	3454	B10	3661	F 6	3677	B 4	3689	A 2	3706	E 3	3720	B 6	3734	E 5	3748	F 8	3763	C 7	5654	F 2	6413	E10	7401	C 9	7656	C 6	9711	D 5	9726	E 7	9744	C 8	9759	D 9	9773	C 9
1708	F 8	2653	C 8	2672	B 4	2688	C 3	2712	C 7	2726	D 5	2749	D 3	3425	F 9	3437	D 8	3455	C10	3662	F 5	3678	B 4	3690	C 2	3707	D 5	3721	B 8	3735	E 5	3749	F 8	3764	D 7	5701	C 5	6414	E10	7402	C 9	7701	E 4	9712	C 5	9729	D 7	9745	F 8	9760	A 9	9774	D 9


RECORDER DIGITAL PART
1 2 3 4 5 6 7 8 9 10 11
A B C D E F G
CCD310 3104 217 25550 PUNT-2
1 = 7V
2 = 7V
3 = 7V
4 = ⊥
5 = 7V
6 = 7V
7 = 7V
8 = 14,6V
1 = 7V
2 = 7V
3 = 7V
4 = 7V
5 = NS=14V HS=0V
6 = NS=14V HS=0V
7 = ⊥
8 = 7V
9 = 7V
10= 7V
11= 7V
12= 13,5V
13= FE=13,5V CRO2=0V
14= 14,6V
1 = PB IN R DECK A
2 = PB OUT
3 = PB OUT
4 = PB IN R DECK A
5 = 0V
6 = 0V
7 = ⊥
8 = PB IN L DECK A
9 = PB OUT
10= PB OUT
11= PB IN DECK A
12= 14V
13= 14V
14= 14,6V
1 = PB OUT L
2 = PB OUT R
3 = LINE IN R
4 = 7V
5 = 7V
6 = LINE IN L
7 = 0V
8 = 14V
9 = FE=H/CRO2=L
10=PB=0V
11=0,3V
12=7V
13= ⊥
14=14,5V
15=9,6V
16=OSC
17= ⊥
18=OSC
19=0,6V
20=14V
21=7,5V
22=7,5V
23=PB IN R
24=PB⊥
25=7V
26=PB⊥
27=PB IN L
28=REC L
29=REC R
30=7,5V
31=7,5V
32=7,5V
33=7,5V
34=PB IN R DECK A
35=7V
36=PB⊥ DECK A
37=7V
38=PB IN L DECK A
39=7,5V
40=7,5V
e = 7v
b = 1v
c = 7v
e = 7v
b = 1v
c = 7v
1 = CD IN R
2 = OUT R
3 = OUT R
4 = REC IN R
5 = 13,8V
6 = 13,8V
7 = ⊥
8 = REC IN L
9 = OUT L
10= OUT L
11= CD IN
12= 0V
13= 0V
14= 14,6V
1 = 14v
2 = ⊥
3 = 5V
1 = REC IN R
2 = 14V
3 = PB IN R
4 = VR = 7V
5 = DOLBY OFF=H ON=L
6 = LINE OUT R
7 = 7V
8 = REC OUT R
9 = REC OUT L
10=ON=1V OFF=0,4V
11= LINE OUT = L
12= DOLBY PB=H REC=L
13= 0V
14= PB IN L
15= ⊥
16=REC IN L
1 = 5V
2 = 0V
3 = NS=0V
4 = NS=13,5V
5 = NS=1,5V
6 = 0V
7 = ⊥
8 = FE=13,5V CRO2=0V
9 = FE=0V CRO2=5V
10= 13,5V
11= PB=0V
12= 0V
13= 5V
14= 4,2V
e = ⊥
b = 0V
c = 13V
e = ⊥
b = 0V
c = 13,5V
e = ⊥
b = 0V
c = 13,5V
e = ⊥
b = 0V
c = 13,5V
e = ⊥
b = 0V
c = 13V
1 = 4,8V
2 = 4,8V
3 = 5V
4 = 0V
5 = 0V
6 = 4,8V
7 = 4,8V
8 = 0V
9 = 4,8V
10 = 0V
11 = 4,8V
12 = 0V
13 = 4,8V
14 = 0V
15 = 0V
16 = 0V
17 = 0V
18 = 0V
19 = 0V
20 = ⊥
21 = 4,8V
22 = 4,8V
23 = 4,8V
24 = 0V
25 = 0V
26 = 0V
27 = 0V
28 = 0V
29 = 4,8V
30 = 4,8V
31 = 4,8V
32 = 4,8V
33 = 4,8V
34 = 0V
35 = 4,8V
36 = 0V
37 = 4,8V
38 = 2,9V
39 = 2,6V
40 = 5V
7701
7702
7703
7401
7402
7651
7652
7653
7656
1401
1403
1701
1702
1704
1705
1706
1707
1708
1710
1711
5651
5652
5653
5654
5701
5702
5703
0071
0072

2651	B31	2656	K18	2661	F26	2666	I28	2671	B26	2676	M23	2681	C22
2652	N31	2657	F26	2662	J26	2667	O32	2672	M26	2677	D23	2682	N22
2653	G34	2658	L26	2663	G26	2668	O31	2673	B24	2678	O23	2683	D22
2654	I34	2659	G25	2664	J26	2669	P31	2674	M24	2679	C22	2684	O22
2655	F18	2660	J25	2665	I27	2670	O31	2675	B23	2680	N22	2685	D21

2686	O21	2691	D20	2696	N19	2702	N 6	2707	C 6	2712	J 5	2716	I 3
2687	C21	2692	O20	2697	D19	2703	L 6	2708	K 6	2713	G 3	2717	D 3
2688	N21	2693	D19	2698	N19	2704	N 6	2709	G 6	2714	J 3	2718	F 3
2689	C21	2694	N19	2699	B21	2705	C 5	2710	J 6	2714	D15	2719	C13
2690	N21	2695	C19	2701	L 6	2706	L 5	2711	G 5	2715	G 3	2720	L13

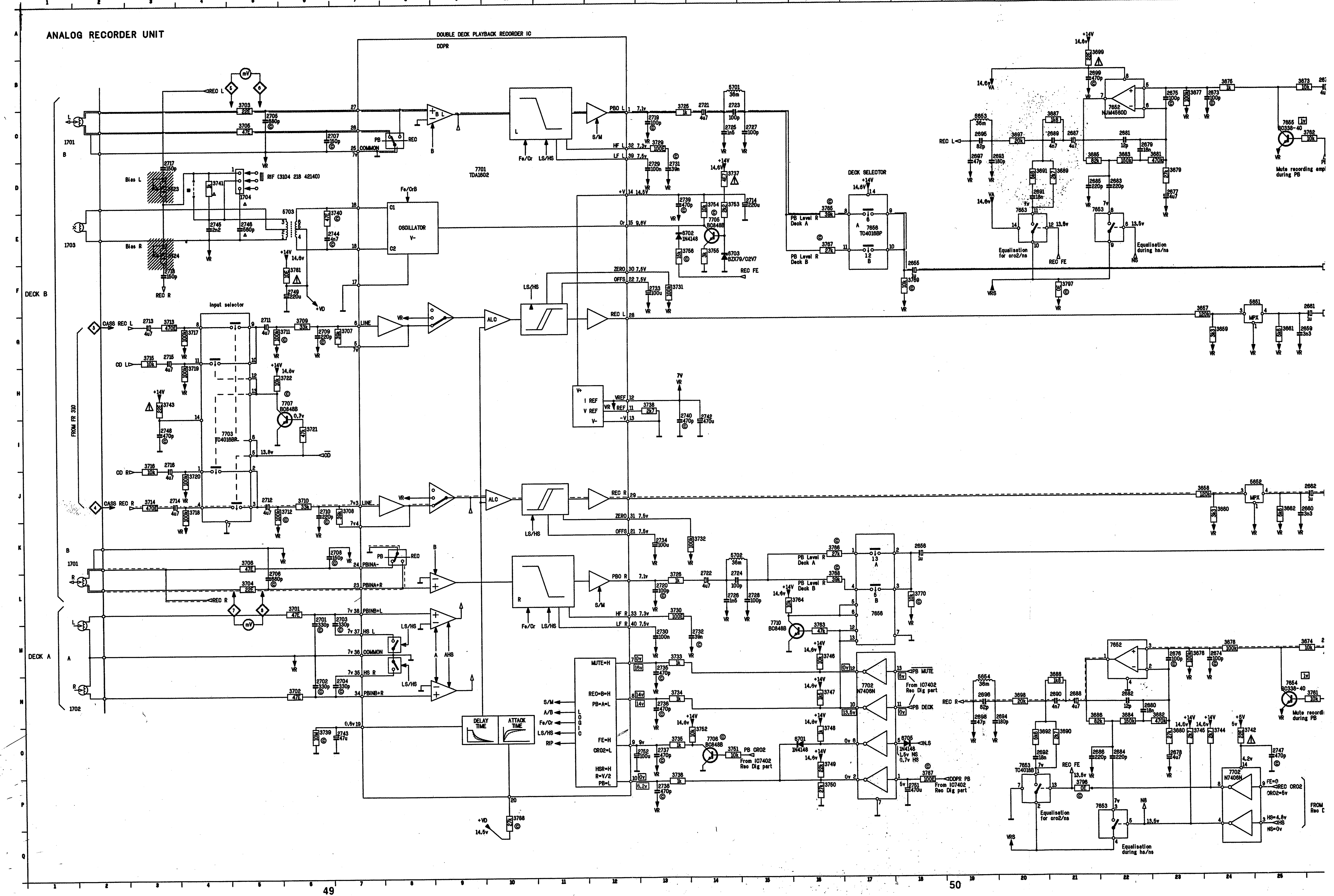
2721	B14	2726	L14	2731	D13	2736	N13	2742	I14	2747	O25	2752	O12
2722	L14	2727	C15	2732	M13	2737	O13	2743	O 6	2748	I 3	3651	G35
2723	B14	2728	L15	2733	F13	2738	P13	2744	E 6	2749	F 6	3652	I35
2724	L14	2729	D13	2734	K13	2739	D13	2745	E 4	2750	H34	3653	H34
2725	C14	2730	M13	2735	M13	2740	I13	2746	E 5	2751	P18	3654	I34

3655	F26	3660	J24	3665	H27	3674	M26	3679	D23	3684	N22	3689	D21
3656	K26	3661	G25	3666	H28	3675	B24	3680	O23	3685	D21	3690	O21
3657	G24	3662	J25	3667	P29	3677	B23	3681	D23	3686	N21	3691	D20
3658	J24	3663	G26	3668	O31	3678	M24	3682	N23	3687	C21	3692	O20
3659	G24	3664	J26	3673	B26	3678	M23	3683	D22	3688	N21	3697	C20

3698	N20	3704	L 5	3709	G 6	3714	J 3	3719	H 4	3724	E 3	3731	F13
3699	B21	3705	C 5	3710	J 6	3715	G 3	3720	J 4	3725	C13	3732	K14
3701	L 6	3706	K 5	3711	G 5	3716	I 3	3721	I 6	3726	L13	3733	M13
3702	N 6	3707	G 7	3712	J 5	3717	G 4	3722	H 5	3729	C13	3734	N13
3703	B 5	3708	J 7	713	G 3	3718	J 4	3723	D 3	3730	L13	3735	O13

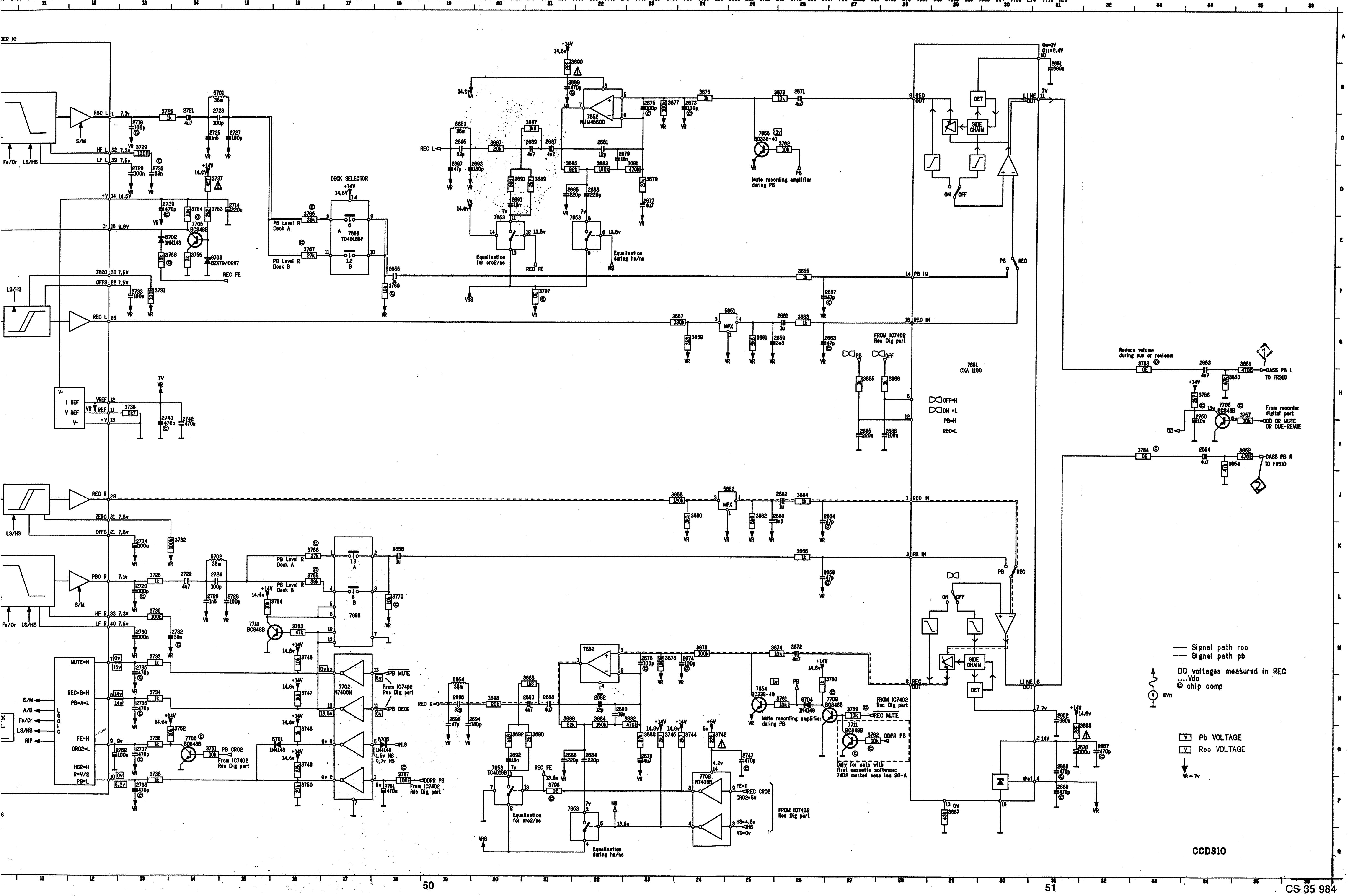
3736	P13	3741	D 4	3746	M16	3751	O14	3756	E13	3761	N26	3766
3737	D14	3742	O24	3747	N16	3752	O14	3757	H35	3762	C26	3767
3738	H13	3743	H 3	3748	O16	3753	D14	3758	H34	3763	M16	3768
3739	O 6	3744	O24	3749	O16	3754	D14	3759	N27	3764	L15	3769
3740	E 6	3745	O23	3750	P16	3755	E14	3760	N26	3765	E16	3770

ANALOG RECORDER UNIT



DOUBLE DECK PLAYBACK RECORDER IC
DDPR
7701
TDA1602
DECK B
DECK A
1701
1703
1702
REC L
REC R
Bias L
Bias R
RIF (3104 218 42140)
1704
5703
OSCILLATOR
Fe/CrB
input selector
7703
TC4016BP
CASS REC L
CASS REC R
CD L
CD R
FROM FR 310
7707
BC848B
LINE
ALC
LS/HS
S/M
Fe/Cr
PB
REC
COMMON
PBINA-
PBINA+R
PBINB+L
PBINB+R
HS L
HS R
AHS
DELAY TIME
ATTACK TIME
MUTE=H
REC=B=H
PB=A=L
LOGIC
FE=H
CRO2=L
HSR=H
R=V/2
PB=L
A/B
RIP
PBO L
PBO R
HF L
LF L
HF R
LF R
ZERO
OFFS
V+
I REF
V REF
V-
VREF
DECK SELECTOR
7656
TC4016BP
PB Level R Deck A
PB Level R Deck B
7705
BC848B
6702
1N4148
6703
BZX79/C2V7
REC FE
7706
7708
BC848B
7710
BC848B
7702
N7406N
PB MUTE
PB DECK
From IC7402 Rec Dig part
DDPR PB
6701
1N4148
6705
1N4148
PB CRO2
7652
NJM4560D
7653
TC4016B
Equalisation for cro2/ns
Equalisation during hs/ns
REC FE
MPX
5651
5652
7654
BC338-40
7655
BC338-40
Mute recording during PB
FE=0
REC CRO2
CRO2=5v
HS=4.8v
HS
NS=0v
FROM Rec
+14V
14.6v
VR
VRS
+VD

	4
	5
	5
	3
	3
2731	D13
2732	M13
2733	F13
2734	K13
2735	M13
2736	N13
2737	O13
2738	P13
2739	D13
2740	I13
2742	I14
2743	O 6
2744	E 6
2745	E 4
2746	E 5
2747	O25
2748	I 3
2749	F 6
2750	H34
2751	P18
2752	O12
3651	G35
3652	I35
3653	H34
3654	I34
3655	F26
3656	K26
3657	G24
3658	J24
3659	G24
3660	J24
3661	G25
3662	J25
3663	G26
3664	J26
3665	H27
3666	H28
3667	P29
3668	O31
3673	B26
3674	M26
3675	B24
3677	B23
3678	M24
3678	M23
3679	D23
3680	O23
3681	D23
3682	N23
3683	D22
3684	N22
3685	D21
3686	N21
3687	C21
3688	N21
3689	D21
3690	O21
3691	D20
3692	O20
3697	C20
3698	N20
3699	B21
3701	L 6
3702	N 6
3703	B 5
3704	L 5
3705	C 5
3706	K 5
3707	G 7
3708	J 7
3709	G 6
3710	J 6
3711	G 5
3712	J 5
713	G 3
3714	J 3
3715	G 3
3716	I 3
3717	G 4
3718	J 4
3719	H 4
3720	J 4
3721	I 6
3722	H 5
3723	D 3
3724	E 3
3725	C13
3726	L13
3729	C13
3730	L13
3731	F13
3732	K14
3733	M13
3734	N13
3735	O13
3736	P13
3737	D14
3738	H13
3739	O 6
3740	E 6
3741	D 4
3742	O24
3743	H 3
3744	O24
3745	O23
3746	M16
3747	N16
3748	O16
3749	O16
3750	P16
3751	O14
3752	O14
3753	D14
3754	D14
3755	E14
3756	E13
3757	H35
3758	H34
3759	N27
3760	N26
3761	N26
3762	C28
3763	M16
3764	L15
3765	E16
3766	K16
3767	E16
3768	L16
3769	F18
3770	L18
3781	F 6
3782	O27
3783	O33
3784	I33
3787	P18
3788	P10
3796	P21
3797	F21
5651	F25
5652	J25
5653	C19
5654	N19
5701	B14
5702	K14
6701	O16
6702	E13
6703	E14
6704	N26
6705	O18
7651	O29
7652	M22
7652	C22
7653	E20
7653	E22
7653	O20
7653	P22
7654	N25
7655	C25
7656	L17
7656	E17
7701	D 9
7702	N17
7702	P24
7703	I 4
7705	E14
7706	O14
7707	H 6
7708	H34
7709	N27
7710	M15
7711	O27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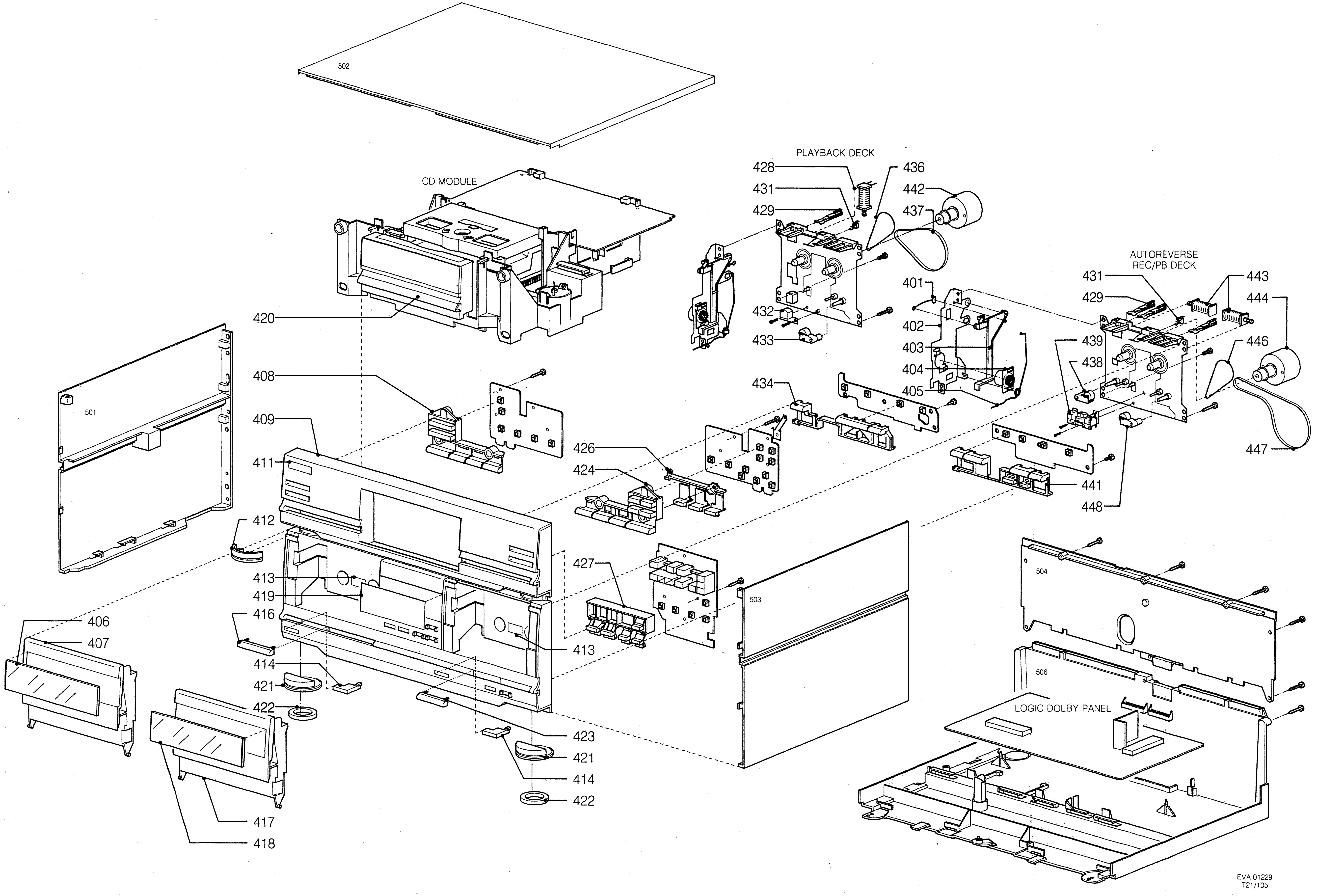
35
36
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
DER IO
PBO L
HF L
LF L
+V
Cr
ZERO
OFFS
REC L
REC R
PBO R
HF R
LF R
S/M
Fe/Cr
LS/HS
I REF
V REF
V+
V-
VREF
REF
-V
MUTE=H
REC=B=H
PB=A=L
FE=H
CRO2=L
HSR=H
R=V/2
PB=L
L O G I C
S/M
A/B
Fe/Cr
LS/HS
RIP
DECK SELECTOR
PB Level R Deck A
PB Level R Deck B
7656 TC4016BP
7702 N7406N
7652 NJM4560D
7653 TC4016B
7651 CXA 1100
REC L
REC R
Equalisation for cro2/ns
Equalisation during hs/ns
REC FE
VRS
MPX
DET
SIDE CHAIN
REC OUT
LINE OUT
PB IN
REC IN
PB
REC
ON
OFF
OFF=H
ON =L
PB=H
REC=L
On=1V
Off=0.4V
Mute recording amplifier during PB
7655 BC338-40
7654 BC338-40
7705 BC848B
7706 BC848B
7708 BC848B
7709 BC848B
7710 BC848B
7711 BC848B
6701 1N4148
6702 1N4148
6703 BZX79/C2V7
6704 1N4148
6705 1N4148
REC FE
PB CRO2
From 107402 Rec Dig part
JPB MUTE
JPB DECK
N.S
1.5v NS
0.7v HS
DDPR PB
REC MUTE
DDPR PB
FE=0
CRO2=5v
REC CRO2
HS=4.8v
NS=0v
HS
FROM 107402 Rec Dig part
Only for sets with first cassette software: 7402 marked cass lev 90-A
Reduce volume during cue or revieuw
CASS PB L TO FR310
CASS PB R TO FR310
From recorder digital part
OD OR MUTE OR CUE-REVUE
Signal path rec
Signal path pb
DC voltages measured in REC
....Vdc
© chip comp
Evn
Pb VOLTAGE
Rec VOLTAGE
VR = 7v
CCD310


502
CD MODULE
420
501
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414
422
PLAYBACK DECK
428
431
429
432
433
436
442
437
401
402
403
404
405
434
503
AUTOREVERSE
REC/PB DECK
431
429
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447
441
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504
506
LOGIC DOLBY PANEL
EVA 01229
T21/105

Mechani

	482
	482
401	482
402	482
403	482
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413	482
414	482
416	482
417	482
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418	482
419	482
420	482
421	482
422	482
423	482
424	482
425	482
426	482
427	482
428	482
429	4822
431	4822
432	4822
433	4822
434	4822
436	4822
437	4822
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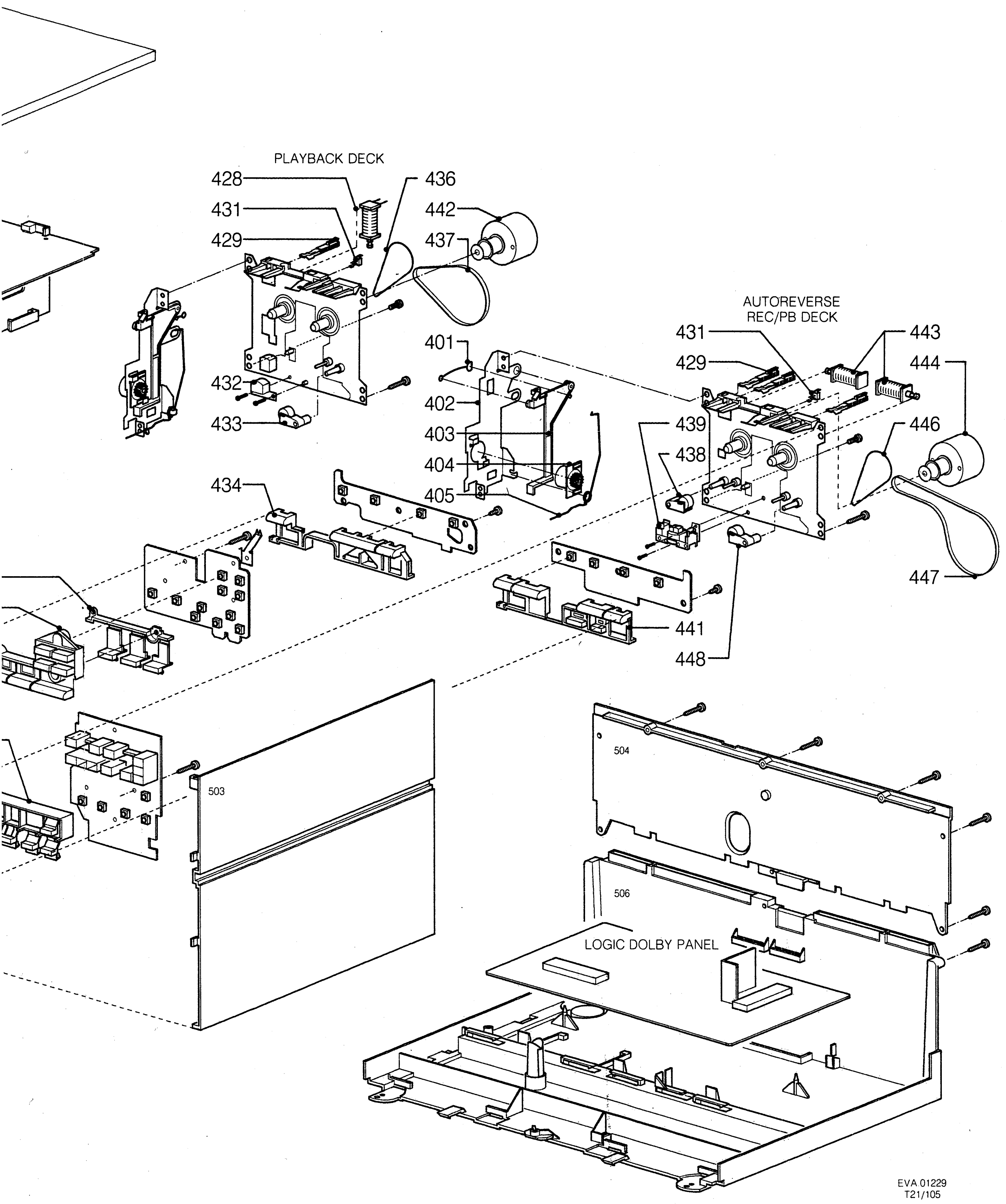
439	4822
441	4822
442	4822
443	4822
444	4822
446	4822
447	4822
448	4822



Mechanical partslist

	4822 691 20657	REC/PB DECK ASSY
	4822 691 20656	PB DECK ASSY
401	4822 492 52239	EJECT SPRING
402	4822 403 70379	BRACKET (CASS)
403	4822 403 70381	BRACKET (CASS EJECT)
404	4822 529 10269	DAMPER
405	4822 492 42534	CASSETTE DOOR SPRING
406	4822 450 61696	CASS WINDOW LEFT
407	4822 443 63276	CASS LID LEFT
	4822 492 63927	CASS PRESSURE SPRING
408	4822 410 61172	BUTTON SET CD (LEFT)
409	4822 444 40445	FRONT PRINTED
411	4822 459 10887	WORDMARK "PHILIPS"
412	4822 462 71743	FOOT CD-PART
413	4822 380 30292	MIRROR
414	4822 410 61174	EJECT BUTTON
416	4822 410 61178	STOP BUTTON
417	4822 443 63277	CASS LID RIGHT
	4822 492 63927	CASS PRESSURE SPRING
418	4822 450 61697	CASS WINDOW RIGHT
419	4822 450 61695	RECORDER WINDOW
420	4822 454 30447	ORNAMENTAL STRIP CD
421	4822 462 71744	FOOT
422	4822 410 61179	PLAY BUTTON
423	4822 462 41783	RUBBER FOOT
424	4822 410 61173	BUTTON SET CD (6x)
425	4822 454 21035	ORNAMENTAL STRIP CASS
426	4822 410 61171	BUTTON SET CD (3x)
427	4822 410 61177	BUTTON SET (DUBBING)
428	4822 281 11059	SOLENOID ASSY
429	4822 276 13076	SWITCH
431	4822 278 90673	SWITCH
432	4822 249 30168	PB HEAD
433	4822 528 70727	PINCH ROLLER ASSY
434	4822 410 61175	BUTTON SET REC LEFT
436	4822 528 20724	CLUTCH BELT FRICTION
437	4822 358 31122	DRIVE BELT MOTOR
438	4822 528 70729	PINCH ROLLER LEFT
439	4822 691 30245	ROTATION HEAD ASSY
441	4822 410 61176	BUTTON SET REC RIGHT
442	4822 361 21429	MOTOR
443	4822 281 11061	SOLENOID ASSY
444	4822 361 21429	MOTOR
446	4822 528 20725	CLUTCH BELT FRICTION
447	4822 358 31123	DRIVE BELT MOTOR
448	4822 528 70728	PINCH ROLLER RIGHT

MISCELLANEOUS

SK3	4822 276 12523	TACT SWITCH
1451	4822 276 13066	TACT SWITCH
1452	4822 276 13066	TACT SWITCH
1453	4822 276 13066	TACT SWITCH
1454	4822 276 13066	TACT SWITCH
1455	4822 276 13066	TACT SWITCH
1456	4822 276 13066	TACT SWITCH
1457	4822 276 13066	TACT SWITCH
1458	4822 276 13066	TACT SWITCH
1459	4822 276 13066	TACT SWITCH
1460	4822 276 13066	TACT SWITCH
1461	4822 276 13066	TACT SWITCH
1462	4822 276 13066	TACT SWITCH
1463	4822 276 13066	TACT SWITCH
1464	4822 276 13066	TACT SWITCH
1465	4822 276 13066	TACT SWITCH
1466	4822 276 13066	TACT SWITCH
1970	4822 276 13066	TACT SWITCH
1971	4822 276 13066	TACT SWITCH
1972	4822 276 13066	TACT SWITCH
1973	4822 276 13066	TACT SWITCH
1974	4822 276 13066	TACT SWITCH
1975	4822 276 13066	TACT SWITCH
1976	4822 276 13066	TACT SWITCH
1977	4822 276 13066	TACT SWITCH
1978	4822 276 13066	TACT SWITCH
1979	4822 276 13066	TACT SWITCH
1980	4822 276 13066	TACT SWITCH
1981	4822 276 13066	TACT SWITCH
1982	4822 276 13066	TACT SWITCH
1983	4822 276 13066	TACT SWITCH
1984	4822 276 13066	TACT SWITCH
1985	4822 276 13066	TACT SWITCH
1986	4822 276 13066	TACT SWITCH
1989	4822 130 90964	DISPLAY (FTD)

TRANSISTORS

7403	5322 130 41983	BC858B (CHIP)
7404	5322 130 41982	BC848 (CHIP)
7405	5322 130 41983	BC858B (CHIP)
7406	5322 130 41983	BC858B (CHIP)
7407	5322 130 41982	BC848 (CHIP)
7408	5322 130 44779	BC338-40
7409	5322 130 44779	BC338-40
7410	5322 130 44779	BC338-40
7411	5322 130 44779	BC338-40
7412	5322 130 44779	BC338-40
7413	5322 130 41982	BC848 (CHIP)
7414	5322 130 41982	BC848 (CHIP)
7415	5322 130 41982	BC848 (CHIP)
7416	5322 130 41982	BC848 (CHIP)
7417	5322 130 41982	BC848 (CHIP)
7418	5322 130 41982	BC848 (CHIP)
7419	5322 130 41982	BC848 (CHIP)
7420	5322 130 41982	BC848 (CHIP)
7654	5322 130 44779	BC338-40
7655	5322 130 44779	BC338-40
7705	5322 130 41982	BC848 (CHIP)
7706	5322 130 41982	BC848 (CHIP)
7707	5322 130 41982	BC848 (CHIP)
7708	5322 130 41982	BC848 (CHIP)
7709	5322 130 41982	BC848 (CHIP)
7710	5322 130 41982	BC848 (CHIP)
7711	5322 130 41982	BC848 (CHIP)
7791	5322 130 41982	BC848 (CHIP)
7792	5322 130 41982	BC848 (CHIP)
7801	4822 130 44121	BC338
7812	4822 130 61207	BC848 (CHIP)
7813	4822 130 61207	BC848 (CHIP)
7814	4822 130 42696	BC818-25
7815	4822 130 42696	BC818-25
7830	4822 130 61207	BC848 (CHIP)
7831	4822 130 44104	BC328
7832	4822 130 61207	BC848 (CHIP)
7860	5322 130 42012	BC858 (CHIP)
7971	4822 130 40938	BC548
7972	4822 130 40941	BC558
7973	4822 130 40941	BC558
7974	4822 130 40941	BC558

COILS

1800	4822 242 73557	CERAMIC RES. 8,46MHz
1802	4822 242 72527	CERAMIC RES. 4.0 MHz
5401	4822 242 72567	FRC4,0MCT
5651	4822 242 73768	MPX-FILTER
5652	4822 242 73768	MPX-FILTER
5653	4822 156 20811	COIL 36uH
5654	4822 156 20811	COIL 36uH
5701	4822 156 20811	COIL 36uH
5702	4822 156 20811	COIL 36uH
5703	4822 156 20946	OSC.COIL 100kHz
5861	4822 157 60363	INTERFERENCE COIL

INTEGRATED CIRCUITS

7401	4822 209 80891	MC7805CT
7402	4822 209 63802	uP
7451	4822 209 61522	PC74HCT4094P
7452	4822 209 61522	PC74HCT4094P
7651	4822 209 72749	CXA1100P
7652	4822 209 83274	NJM4560D
7653	4822 209 71636	TC4016BP
7656	4822 209 71636	TC4016BP
7701	4822 209 62372	TDA1602A/N3
7702	5322 209 86327	N7406N
7703	4822 209 71636	TC4016BP
7800	4822 209 73234	TDA8808T/C3
7802	4822 209 73235	TDA8809T/C2
7803	4822 209 72587	TCA372DP2
7805	4822 209 62112	M50423FP
7806	4822 209 70422	MN4264-15
7807	4822 209 73236	TDA1543/N2
7808	4822 209 83163	LM833N
7820	4822 209 63724	MC68HC05C9P/3961
7825	4822 209 72587	TCA372DP2
7840	4822 209 80797	LM393N
7870	4822 209 73233	MC79L05ACP
7880	4822 209 71579	TY40408
7970	4822 209 72226	DISP. DRIVER U3090MG

DIODES

6402	4822 130 30621	1N4148
6403	4822 130 30621	1N4148
6406	4822 130 30621	1N4148
6407	4822 130 30621	1N4148
6408	4822 130 30621	1N4148
6409	4822 130 30621	1N4148
6410	4822 130 30621	1N4148
6411	4822 130 30621	1N4148
6413	4822 130 30621	1N4148
6414	4822 130 30621	1N4148
6415	4822 130 30621	1N4148
6416	4822 130 30621	1N4148
6451	4822 130 30621	1N4148
6452	4822 130 30621	1N4148
6453	4822 130 30621	1N4148
6454	4822 130 30621	1N4148
6460	4822 130 81723	GL3HD47
6461	4822 130 81723	GL3HD47
6462	4822 130 81723	GL3HD47
6463	4822 130 81723	GL3HD47
6464	4822 130 81723	GL3HD47
6465	4822 130 81723	GL3HD47
6466	4822 130 81723	GL3HD47
6467	4822 130 81723	GL3HD47
6468	4822 130 81723	GL3HD47
6469	4822 130 81723	GL3HD47
6470	4822 130 81723	GL3HD47
6701	4822 130 30621	1N4148
6702	4822 130 30621	1N4148
6703	5322 130 34563	BZX79-C2V7
6704	4822 130 30621	1N4148
6705	4822 130 30621	1N4148
6791	4822 130 34488	BZX79-C11
6800	4822 130 30861	BZX79-C7V5
6801	4822 130 30861	BZX79-C7V5
6802	4822 130 30621	1N4148
6805	4822 130 34174	BZX79-C4V7
6840	5322 130 30684	1N4002
6841	5322 130 30684	1N4002
6842	4822 130 30621	1N4148
6843	4822 130 34174	BZX79-C4V7
6850	4822 130 30621	1N4148
6860	4822 130 31981	BZX79-C3V9
6868	4822 130 30621	1N4148
6970	4822 130 30621	1N4148
6971	4822 130 34281	BZX79-C15
6975	4822 130 30621	1N4148
7816	5322 130 34337	BAV99

RESISTORS

3401	4822 116 80311	4,7R	5%	NFR
3402	4822 116 80311	4,7R	5%	NFR
3403	4822 051 20103	10k	5%	0,1W
3408	4822 050 24703	47k	1%	0,6W
3409	4822 050 24703	47k	1%	0,6W
3410	4822 050 24703	47k	1%	0,6W
3412	4822 050 24703	47k	1%	0,6W
3413	4822 050 21803	18k	1%	0,6W
3414	4822 050 24703	47k	1%	0,6W
3415	4822 050 11009	10R	1%	0,4W
3416	4822 116 52264	27k	5%	0,5W
3417	4822 116 52264	27k	5%	0,5W
3418	4822 116 52264	27k	5%	0,5W
3419	4822 116 52264	27k	5%	0,5W
3420	4822 116 52264	27k	5%	0,5W
3421	4822 116 52264	27k	5%	0,5W
3422	4822 116 52264	27k	5%	0,5W
3423	4822 116 52263	2k7	5%	0,5W
3425	4822 050 21501	150R	1%	0,6W
3426	4822 100 11348	1k	POTMETER	

RESISTORS

3427	4822 050 15602	5k6	1%	0,4W
3428	4822 100 11391	330R	POTMETER	
3430	4822 100 11391	330R	POTMETER	
3431	4822 116 52234	100k	5%	0,5W
3432	4822 116 52234	100k	5%	0,5W
3433	4822 050 22202	2k2	1%	0,6W
3434	4822 050 22204	220k	1%	0,6W
3435	4822 116 52234	100k	5%	0,5W
3436	4822 050 21002	1k	1%	0,6W
3437	4822 050 21002	1k	1%	0,6W
3438	4822 050 21002	1k	1%	0,6W
3439	4822 050 21002	1k	1%	0,6W
3440	4822 050 21002	1k	1%	0,6W
3441	4822 050 22203	22k	1%	0,6W
3442	4822 050 22203	22k	1%	0,6W
3443	4822 050 22203	22k	1%	0,6W
3444	4822 050 22203	22k	1%	0,6W
3445	4822 050 22203	22k	1%	0,6W
3446	4822 050 22203	22k	1%	0,6W
3447	4822 050 21502	1k5	1%	0,6W
3451	4822 116 82366	2R2	5%	
3460	4822 116 52217	270R	5%	0,5W
3461	4822 116 52217	270R	5%	0,5W
3462	4822 116 52217	270R	5%	0,5W
3463	4822 116 52217	270R	5%	0,5W
3464	4822 116 52217	270R	5%	0,5W
3465	4822 116 52217	270R	5%	0,5W
3466	4822 116 52217	270R	5%	0,5W
3467	4822 116 52217	270R	5%	0,5W
3468	4822 116 52217	270R	5%	0,5W
3469	4822 116 52217	270R	5%	0,5W
3470	4822 116 52217	270R	5%	0,5W
3471	4822 050 21003	10k	2%	0,25W
3651	4822 116 52224	470R	5%	0,5W
3652	4822 116 52224	470R	5%	0,5W
3653	4822 050 24703	47k	1%	0,6W
3654	4822 050 24703	47k	1%	0,6W
3655	4822 050 21002	1k	1%	0,6W
3656	4822 050 21002	1k	1%	0,6W
3657	4822 050 21204	120k	1%	0,6W
3658	4822 050 21204	120k	1%	0,6W
3659	4822 050 23302	3k3	1%	0,6W
3660	4822 050 23302	3k3	1%	0,6W
3661	4822 050 15602	5k6	1%	0,4W
3662	4822 050 15602	5k6	1%	0,4W
3663	4822 050 21002	1k	1%	0,6W
3664	4822 050 21002	1k	1%	0,6W
3665	4822 050 21002	1k	1%	0,6W
3666	4822 050 21002	1k	1%	0,6W
3667	4822 050 24303	43k	1%	0,6W
3668	4822 052 10229	22R	5%	0,33W
3673	4822 050 21003	10k	2%	0,25W
3674	4822 050 21003	10k	2%	0,25W
3675	4822 050 21002	1k	1%	0,6W
3676	4822 050 21002	1k	1%	0,6W
3677	4822 116 52234	100k	5%	0,5W
3678	4822 116 52234	100k	5%	0,5W
3679	4822 116 52264	27k	5%	0,5W
3680	4822 116 52264	27k	5%	0,5W
3681	4822 050 24704	470k	1%	0,6W
3682	4822 050 24704	470k	1%	0,6W
3683	4822 050 21504	150k	1%	0,6W
3684	4822 050 21504	150k	1%	0,6W
3685	4822 116 52866	82k	1%	0,6W
3686	4822 116 52866	82k	1%	0,6W
3689	4822 116 52263	2k7	5%	0,5W
3690	4822 116 52263	2k7	5%	0,5W
3691	4822 050 15602	5k6	1%	0,4W
3692	4822 050 15602	5k6	1%	0,4W
3697	4822 050 22003	20k	1%	0,6W
3698	4822 050 22003	20k	1%	0,6W
3699	4822 052 10229	22R	5%	0,33W
3701	4822 050 14709	47R	1%	0,4W
3702	4822 050 14709	47R	1%	0,4W
3703	4822 116 52186	22R	5%	0,5W
3704	4822 116 52186	22R	5%	0,5W
3705	4822 050 14709	47R	1%	0,4W
3706	4822 050 14709	47R	1%	0,4W
3707	4822 050 23903	39k	1%	0,6W
3708	4822 050 23903	39k	1%	0,6W
3709	4822 050 13303	33k	1%	0,4W
3710	4822 050 13303	33k	1%	0,4W
3713	4822 116 52224	470R	5%	0,5W
3714	4822 116 52224	470R	5%	0,5W
3715	4822 050 23903	39k	1%	0,6W
3716	4822 050 23903	39k	1%	0,6W
3717	4822 116 52234	100k	5%	0,5W
3718	4822 116 52234	100k	5%	0,5W
3719	4822 116 52234	100k	5%	0,5W
3720	4822 116 52234	100k	5%	0,5W
3721	4822 050 24703	47k	1%	0,6W
3722	4822 050 21003	10k	2%	0,25W
3723	4822 100 11392	47k	POTMETER	
3724	4822 100 11392	47k	POTMETER	
3725	4822 050 21002	1k	1%	0,6W
3726	4822 050 21002	1k	1%	0,6W
3731	4822 116 52234	100k	5%	0,5W
3732	4822 116 52234	100k	5%	0,5W
3733	4822 050 21002	1k	1%	0,6W
3734	4822 050 21002	1k	1%	0,6W

RESISTORS

3735	4822 050 21002	1k	1%	0,6W
3736	4822 050 21002	1k	1%	0,6W
3737	4822 116 80311	4,7R	5%	NFR
3738	4822 050 22702	2k7	1%	0,6W
3739	4822 051 10106	10M	5%	0,25W
3742	4822 052 10229	22R	5%	0,33W
3743	4822 052 10229	22R	5%	0,33W
3744	4822 116 52263	2k7	5%	0,5W
3745	4822 116 52263	2k7	5%	0,5W
3746	4822 050 21003	10k	2%	0,25W
3747	4822 050 21502	1k5	1%	0,6W
3748	4822 050 21002	1k	1%	0,6W
3749	4822 050 22203	22k	1%	0,6W
3750	4822 116 52264	27k	5%	0,5W
3751	4822 050 21003	10k	2%	0,25W
3752	4822 050 21003	10k	2%	0,25W
3753	4822 050 22202	2k2	1%	0,6W
3754	4822 050 21003	10k	2%	0,25W
3755	4822 050 23002	3k	1%	0,6W
3757	4822 050 21003	10k	2%	0,25W
3759	4822 051 20103	10k	5%	0,1W
3760	4822 050 21002	1k	1%	0,6W
3761	4822 050 21003	10k	2%	0,25W
3762	4822 050 21003	10k	2%	0,25W
3763	4822 050 24703	47k	1%	0,6W
3764	4822 050 21003	10k	2%	0,25W
3769	4822 051 20103	10k	5%	0,1W
3770	4822 051 20103	10k	5%	0,1W
3781	4822 116 80562	10R	5%	NFR
3782	4822 051 20103	10k	5%	0,1W
3791	4822 050 21002	1k	1%	0,6W
3792	4822 050 21003	10k	2%	0,25W
3793	4822 050 24703	47k	1%	0,6W
3794	4822 116 52921	4k7	1%	0,6W
3800	4822 116 52921	4k7	1%	0,6W
3802	4822 052 10478	4R7	5%	NFR
3803	4822 052 10478	4R7	5%	NFR
3811	4822 052 10189	18R	5%	0,33W
3812	4822 052 10129	12R	5%	0,33W
3813	4822 050 22202	2k2	1%	0,6W
3814	4822 051 10221	220R	2%	0,25W
3816	4822 050 21204	120k	1%	0,6W
3820	4822 116 52866	82k	1%	0,6W
3821	4822 052 10279	27R	5%	0,33W
3822	4822 052 10229	22R	5%	0,33W
3823	4822 100 11193	22k TRIM POT		
3824	4822 050 24704	470k	1%	0,6W
3827	4822 050 21802	1k8	1%	0,6W
3828	4822 050 21803	18k	1%	0,6W
3831	4822 050 21273	12k	2%	0,6W
3833	4822 051 10223	22k	2%	0,25W
3835	4822 050 26802	6k8	1%	0,6W
3836	4822 052 10478	4R7	5%	NFR
3838	4822 050 26802	6k8	1%	0,6W
3839	4822 052 10228	2R2	5%	0,33W
3840	4822 052 10228	2R2	5%	0,33W
3841	4822 050 22202	2k2	1%	0,6W
3843	4822 050 21002	1k	1%	0,6W
3845	4822 052 10478	4R7	5%	NFR
3846	4822 052 10478	4R7	5%	NFR
3851	4822 116 52234	100k	5%	0,5W
3852	4822 116 52234	100k	5%	0,5W
3858	4822 051 20103	10k	5%	0,1W
3859	4822 052 10478	4R7	5%	NFR
3860	4822 052 10478	4R7	5%	NFR
3880	4822 051 20103	10k	5%	0,1W
3885	4822 051 20103	10k	5%	0,1W
3886	4822 052 10109	10R	5%	0,33W
3887	4822 052 10109	10R	5%	0,33W
3893	4822 101 10685	4k7 TRIM POT		
3895	4822 051 20103	10k	5%	0,1W
3896	4822 052 10228	2R2	5%	0,33W
3897	4822 052 10228	2R2	5%	0,33W
3898	4822 052 10478	4R7	5%	NFR
3899	4822 052 10108	1R	5%	0,33W
3900	4822 052 10478	4R7	5%	NFR
3901	4822 050 21002	1k	1%	0,6W
3903	5322 111 90473	RES. NETWORK 8x10k		
3905	4822 051 20103	10k	5%	0,1W
3906	4822 051 20103	10k	5%	0,1W
3908	4822 051 20103	10k	5%	0,1W
3909	4822 051 20103	10k	5%	0,1W
3910	4822 116 52921	4k7	1%	0,6W
3911	4822 050 21002	1k	1%	0,6W
3916	4822 051 20103	10k	5%	0,1W
3918	4822 116 52224	470R	5%	0,5W
3922	4822 051 20103	10k	5%	0,1W
3925	4822 051 20103	10k	5%	0,1W
3930	4822 116 52921	4k7	1%	0,6W
3931	4822 050 21203	12k	1%	0,6W
3932	4822 050 21203	12k	1%	0,6W
3933	4822 050 21203	12k	1%	0,6W
3934	4822 050 21203	12k	1%	0,6W
3936	4822 052 10228	2R2	5%	0,33W
3937	4822 052 10228	2R2	5%	0,33W
3939	4822 051 20103	10k	5%	0,1W
3943	4822 051 20103	10k	5%	0,1W
3944	4822 116 52224	470R	5%	0,5W
3960	4822 050 21003	10k	2%	0,25W
3961	4822 050 21003	10k	2%	0,25W

RESISTORS

3962	4822 050 21003	10k	2%	0,25W
3963	4822 050 21003	10k	2%	0,25W
3970	4822 052 10478	4R7	5%	NFR
3971	4822 050 21502	1k5	1%	0,6W
3972	4822 050 21502	1k5	1%	0,6W
3973	4822 116 52921	4k7	1%	0,6W
3974	4822 116 52921	4k7	1%	0,6W
3975	4822 050 24703	47k	1%	0,6W
3976	4822 050 21504	150k	1%	0,6W
3977	4822 050 21803	18k	1%	0,6W
3978	4822 116 52921	4k7	1%	0,6W
3979	4822 116 52921	4k7	1%	0,6W
3980	4822 116 52921	4k7	1%	0,6W
3981	4822 051 10223	22k	2%	0,25W
3982	4822 051 10223	22k	2%	0,25W
3983	4822 116 52921	4k7	1%	0,6W
3984	4822 116 52921	4k7	1%	0,6W
3985	4822 052 10338	3R3		NFR25
3986	4822 052 10338	3R3		NFR25

CHIP RESISTORS

3404	4822 051 20135	1M3	5%	0,1W
3411	4822 051 10101	100R	2%	0,25W
3429	4822 051 10122	1k2	2%	0,25W
3448	4822 051 20104	100k	5%	0,1W
3449	4822 051 20682	6k8	5%	0,1W
3450	4822 051 20682	6k8	5%	0,1W
3451	4822 051 20682	6k8	5%	0,1W
3452	4822 051 20682	6k8	5%	0,1W
3453	4822 051 20682	6k8	5%	0,1W
3687	4822 051 10182	1k8	2%	0,25W
3688	4822 051 10182	1k8	2%	0,25W
3711	4822 051 20104	100k	5%	0,1W
3712	4822 051 20104	100k	5%	0,1W
3729	4822 051 10101	100R	2%	0,25W
3730	4822 051 10101	100R	2%	0,25W
3740	4822 051 20479	47R	5%	0,1W
3756	4822 051 20153	15k	5%	0,1W
3758	4822 051 20272	2k7	5%	0,1W
3765	4822 051 20392	3k9	5%	0,1W
3766	4822 051 20272	2k7	5%	0,1W
3767	4822 051 20272	2k7	5%	0,1W
3768	4822 051 20392	3k9	5%	0,1W
3783	4822 051 20008	CHIP JUMPER		
3784	4822 051 20008	CHIP JUMPER		
3787	4822 051 20101	100R	5%	0,1W
3795	4822 051 10101	100R	2%	0,25W
3801	4822 051 20104	100k	5%	0,1W
3804	4822 051 20123	12k	2%	0,1W
3805	4822 051 20101	100R	5%	0,1W
3806	4822 051 10102	1k	2%	0,25W
3807	4822 051 20243	24k	2%	0,1W
3808	4822 051 20562	5k6	5%	0,1W
3810	4822 051 20101	100R	5%	0,1W
3815	4822 051 20113	11k	5%	0,1W
3817	4822 051 20154	150k	5%	0,1W
3818	4822 051 20563	56k	5%	0,1W
3819	4822 051 20164	160k	5%	0,1W
3825	4822 051 20473	47k	5%	0,1W
3826	4822 051 20153	15k	5%	0,1W
3829	4822 051 20512	5k1	5%	0,1W
3830	4822 051 20224	220k	5%	0,1W
3832	4822 051 20224	220k	5%	0,1W
3837	4822 051 20339	33R	5%	0,1W
3842	4822 051 20223	22k	5%	0,1W
3844	4822 051 20124	120k	5%	0,1W
3847	4822 051 10102	1k	2%	0,25W
3848	4822 051 20225	2M2	5%	0,1W
3849	4822 051 20222	2k2	5%	0,1W
3850	4822 051 20224	220k	5%	0,1W
3853	4822 051 20104	100k	5%	0,1W
3854	4822 051 20104	100k	5%	0,1W
3855	4822 051 20229	22R	5%	0,1W
3856	4822 051 10561	560R	2%	0,25W
3857	4822 051 20223	22k	5%	0,1W
3861	4822 051 20123	12k	2%	0,1W
3862	4822 051 20222	2k2	5%	0,1W
3864	4822 051 20473	47k	5%	0,1W
3866	4822 051 10102	1k	2%	0,25W
3867	4822 051 10102	1k	2%	0,25W
3869	4822 051 20473	47k	5%	0,1W
3870	4822 051 20222	2k2	5%	0,1W
3874	4822 051 20471	470R	5%	0,1W
3875	4822 051 20471	470R	5%	0,1W
3881	4822 051 10103	10k	2%	0,25W
3882	4822 051 20561	560R	5%	0,1W
3883	4822 051 10561	560R	2%	0,25W
3888	4822 051 20223	22k	5%	0,1W
3890	4822 051 20472	4k7	5%	0,1W
3891	4822 051 20472	4k7	5%	0,1W
3894	4822 051 20109	10R	5%	0,1W
3902	4822 051 20224	220k	5%	0,1W
3907	4822 051 10103	10k	2%	0,25W
3917	4822 051 10101	100R	2%	0,25W
3919	4822 051 20471	470R	5%	0,1W
3935	4822 051 20229	22R	5%	0,1W
3940	4822 051 10102	1k	2%	0,25W
3941	4822 051 20153	15k	5%	0,1W
3942	4822 051 10102	1k	2%	0,25W

CHIP RESISTORS

4802	4822	051	10008	JUMPER
4803	4822	051	10008	JUMPER
4804	4822	051	10008	JUMPER
4805	4822	051	10008	JUMPER
4806	4822	051	10008	JUMPER
4807	4822	051	10008	JUMPER

4810	4822	051	10008	JUMPER
4811	4822	051	10008	JUMPER
4812	4822	051	10008	JUMPER
4813	4822	051	10008	JUMPER
4814	4822	051	10008	JUMPER

CAPACITORS

2401	4822	124	41525	100uF	20%	25V
2403	4822	124	22794	47uF	20%	10V
2409	4822	124	40178	100uF	20%	10V
2410	4822	121	42408	220nF	5%	63V
2451	4822	124	40246	4,7uF	20%	63V
2452	4822	121	41856	22nF	5%	250V
2457	4822	124	40178	100uF	20%	10V
2651	5322	121	42498	680nF	5%	63V
2652	5322	121	42498	680nF	5%	63V
2653	4822	124	40246	4,7uF	20%	63V
2654	4822	124	40246	4,7uF	20%	63V
2655	4822	124	40242	1uF	20%	63V
2656	4822	124	40242	1uF	20%	63V
2659	4822	121	43676	3,3nF	5%	50V
2660	4822	121	43676	3,3nF	5%	50V
2661	4822	124	40242	1uF	20%	63V
2662	4822	124	40242	1uF	20%	63V
2665	4822	124	40248	10uF	20%	63V
2666	4822	124	40248	10uF	20%	63V
2670	4822	124	41525	100uF	20%	25V
2671	4822	124	40246	4,7uF	20%	63V
2672	4822	124	40246	4,7uF	20%	63V
2677	4822	124	40246	4,7uF	20%	63V
2678	4822	124	40246	4,7uF	20%	63V
2679	4822	121	43179	18nF	5%	63V
2680	4822	121	43179	18nF	5%	63V
2681	4822	126	10791	12pF	5%	50V
2682	4822	126	10791	12pF	5%	50V
2683	4822	122	10172	220pF	10%	50V
2684	4822	122	10172	220pF	10%	50V
2685	4822	122	10172	220pF	10%	50V
2686	4822	122	10172	220pF	10%	50V
2687	4822	124	40246	4,7uF	20%	63V
2688	4822	124	40246	4,7uF	20%	63V
2689	4822	122	10176	4,7nF	10%	50V
2690	4822	122	10176	4,7nF	10%	50V
2691	4822	121	43179	18nF	5%	63V
2692	4822	121	43179	18nF	5%	63V
2693	4822	122	10171	180pF	10%	50V
2694	4822	122	10171	180pF	10%	50V
2695	4822	122	10225	82pF	5%	50V
2696	4822	122	10225	82pF	5%	50V

2697	4822	122	10181	47pF	5%	50V
2698	4822	122	10181	47pF	5%	50V
2711	4822	124	40246	4,7uF	20%	63V
2712	4822	124	40246	4,7uF	20%	63V
2713	4822	124	40246	4,7uF	20%	63V
2714	4822	124	40246	4,7uF	20%	63V
2715	4822	124	40246	4,7uF	20%	63V
2716	4822	124	40246	4,7uF	20%	63V
2717	5322	122	10237	150pF	10%	
2718	5322	122	10237	150pF	10%	
2721	4822	124	40246	4,7uF	20%	63V
2722	4822	124	40246	4,7uF	20%	63V
2723	4822	122	10183	100pF	5%	50V
2724	4822	122	10183	100pF	5%	50V
2725	4822	122	10174	1,5nF	10%	50V
2726	4822	122	10174	1,5nF	10%	50V
2727	4822	122	10183	100pF	5%	50V
2728	4822	122	10183	100pF	5%	50V
2729	5322	121	42386	100nF	5%	63V
2730	5322	121	42386	100nF	5%	63V
2733	4822	124	40178	100uF	20%	10V
2734	4822	124	40178	100uF	20%	10V
2741	4822	124	22263	220uF	20%	25V
2742	4822	124	41997	470pF	20%	10V
2743	4822	124	40433	47uF	20%	25V
2745	4822	121	42783	2,2nF	1%	250V
2749	4822	124	22263	220uF	20%	25V
2751	4822	124	42027	470uF	20%	6,3V
2776	4822	124	40435	10uF	20%	50V
2808	4822	121	43526	47nF	5%	100V
2812	4822	121	43375	220nF	10%	63V
2813	4822	121	51252	470nF	5%	63V
2815	4822	124	40272	33uF	20%	16V
2817	4822	121	51252	470nF	5%	63V
2819	5322	121	42661	330nF	5%	63V
2821	4822	121	51321	8,2nF	1%	63V
2822	4822	121	51321	8,2nF	1%	63V
2823	4822	124	40272	33uF	20%	16V
2824	4822	121	43526	47nF	5%	100V
2825	5322	121	42661	330nF	5%	63V
2828	4822	121	43375	220nF	10%	63V
2829	4822	121	43375	220nF	10%	63V

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SI Wichtig für die Werkstatt!

Nummer: 53012

Datum: 13.3.92

Sachgebiet: AC 53 Midi-Systeme

Service Information

Betrifft:
Cassettendeck +
CD-Player CCD 310

Verteiler: INTERN UND EXTERN

In bisher wenigen Fällen ist festgestellt worden, daß der CD-Tellermotor anläuft, obwohl der CD-Spieler nicht in Betrieb ist oder das komplette System sich in Standby-Funktion befindet.

Liegt in solchen Fällen eine Platte im Spieler, dann rotiert sie auch noch bei Öffnen des Tray.

Abhilfe ist möglich durch folgende Änderung im Servo (Service Manual S.33):
Transistor 7831 entfernen; Emitter- und Kollektoranschluß des Transistors auf dem Print miteinander verbinden (dadurch wird "+5B" zu "+5").

4812 829 53012

Nachdruck nicht gestattet! Änderungen vorbehalten.

PHILIPS

SI Wichtig für die Werkstatt!

Nummer: 53015

Sachgebiet: AC 53 Kompaktanlagen

Datum: 17.3.92

Service Information

Betrifft:

Doppel-Cassetten-Deck
+ CD-Spieler CCD 310

Verteiler: INTERN UND EXTERN

Bei Geräten aus Fertigung vor April 1991 kann es geschehen, daß der µP Pos.7402 in einen blockierten Zustand ("hang up") gerät, wenn während der Aufnahme zweimal die PAUSE-Taste gedrückt wird. In diesen Geräten verwendete Prozessoren sind gekennzeichnet mit "CASS-C3-90-A".

Geräte aus Fertigung ab April 1991 sind mit verbesserten Prozessoren "CASS-C3-90-B" bestückt.

Als Ersatzteil wird unter der im Service Manual genannten Bestellnummer die neue µP-Version geliefert; sie ist zur Abhilfe des o.a. Fehlers zu verwenden.

7402 ZC403911P/CASS-C3-90-B 4822 209 63802.

4812 829 53015

Form 80048

Nachdruck nicht gestattet! Änderungen vorbehalten.

PHILIPS

Sachgebiet: AC 52 Compact Disc

SI

Wichtig für die Werkstatt!

Nummer: 52081

Datum: 31.7.92

Service Information

Betrifft: Doppel-Cassetten-Deck &
CD-Spieler CCD 310

Verteiler: INTERN UND EXTERN

Wegen einer kleinen Fertigungsänderung am CD-Laufwerk für CD 320 und CCD 310 wird für diese Geräte ein neues CDM geliefert. Es ersetzt das bisher verwendete Laufwerk (4822 691 30209) nur in diesen beiden Geräten!

Pos. 112 CDM 4822 691 30286

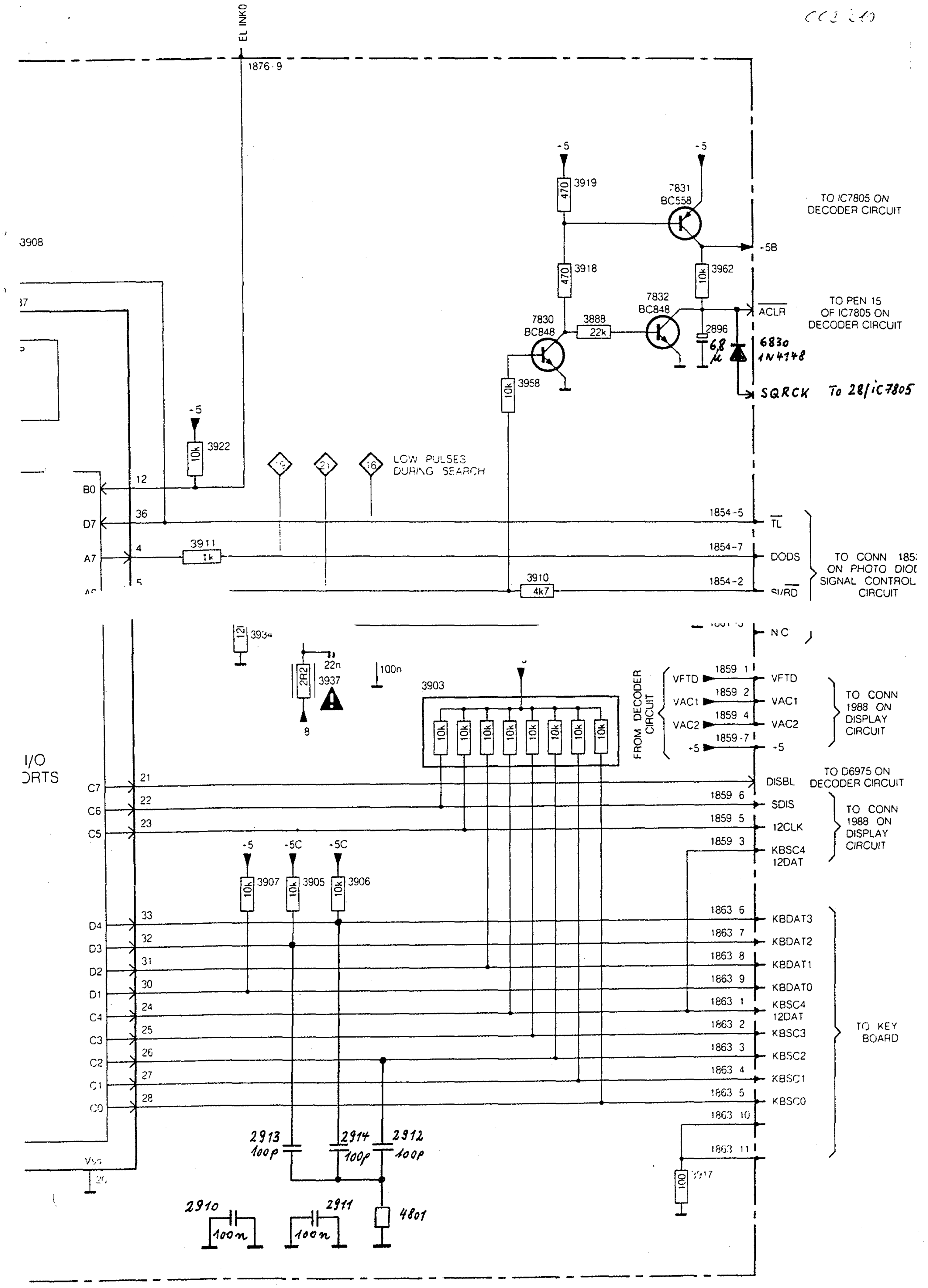
Als Ersatz für Laufwerke anderer CD-Spieler ist dieses Laufwerk nicht geeignet.

4812 829 52081

Form 80 048

Philips GmbH · Geschäftsbereich Service · Hamburg 1

Nachdruck nicht gestattet! Änderungen vorbehalten.


EL INKO
1876-9
-5
3919
470
7831
BC558
-5
TO IC7805 ON DECODER CIRCUIT
-5B
3918
470
3962
10k
7832
BC848
ACLR
TO PEN 15 OF IC7805 ON DECODER CIRCUIT
7830
BC848
3888
22k
2896
68 µ
6830
1N4148
3958
10k
SQRCK
To 28/IC7805
3908
37
-5
3922
10k
LOW PULSES DURING SEARCH
B0
12
D7
36
1854-5
TL
A7
4
3911
1k
1854-7
DODS
5
3910
4k7
1854-2
SWRD
TO CONN 185 ON PHOTO DIOD SIGNAL CONTROL CIRCUIT
12
3934
NC
2R2
3937
22n
100n
8
3903
10k
10k
10k
10k
10k
10k
10k
10k
FROM DECODER CIRCUIT
VFTD
1859 1
VFTD
VAC1
1859 2
VAC1
VAC2
1859 4
VAC2
-5
1859-7
-5
TO CONN 1988 ON DISPLAY CIRCUIT
I/O
ORTS
C7
21
DISBL
TO D6975 ON DECODER CIRCUIT
C6
22
1859 6
SDIS
C5
23
1859 5
12CLK
1859 3
KBSC4
12DAT
TO CONN 1988 ON DISPLAY CIRCUIT
-5
-5C
-5C
3907
10k
3905
10k
3906
10k
D4
33
1863 6
KBDAT3
D3
32
1863 7
KBDAT2
D2
31
1863 8
KBDAT1
D1
30
1863 9
KBDAT0
C4
24
1863 1
KBSC4
12DAT
C3
25
1863 2
KBSC3
C2
26
1863 3
KBSC2
C1
27
1863 4
KBSC1
C0
28
1863 5
KBSC0
1863 10
1863 11
TO KEY BOARD
100
3917
2913
100p
2914
100p
2912
100p
Vss
20
2910
100n
2911
100n
4801

PHILIPS

SI Wichtig für die Werkstatt!

Nummer: 53016

Datum: 25.02.1993

Sachgebiet: AC 53

Service Information

Betrifft: Doppel-Cassetten-Deck + CD-Spieler CCD 310

Verteiler: INTERN UND EXTERN

Im Verlauf der Fertigung ist der Servo- und Decoderprint des CD-Teils mehrfach geändert worden:

1. Kennzeichnung .2, Label A

   Anschlüsse 25-32 des Prozessors 7820 sind zur Verbesserung der ESD-Sicherheit über je einen Kondensator 100pF an Masse gelegt. Die Kondensatoren sind als C-Netzwerk Pos. 2912 ausgeführt.

2912	8 x 100pF	4822 122 90099

2. Kennzeichnung .3, Label B

   Das C-Netzwerk 2912 ist in das Print Lay-out integriert worden.

   Hinzugefügt (s. Abb. 1):

2910, 2911	100nF, 10%	4822 122 33496
2912, 2913, 2914	100pF, 5%, 50V	5322 122 32531
4801 Jumper		4822 051 10008

Die Drahtbrücken 9930, 9926, 9927, 9943, 9949, 9946, 9941, 9940, 9939, 9938, 9902 (s. Serv. Manual, Seite 29; D 3-5) sind durch Sicherheitswiderstände von je 1 E ersetzt worden.

Sicherheitswiderstand 1 E	4822 052 10108

4812 829 53016

Nachdruck nicht gestattet! Änderungen vorbehalten.

3. Kennzeichnung .3, Label C

Um zu verhindern, daß der CD-Tellermotor im Stand-by-Zustand anläuft, sind folgende Änderungen eingeführt worden (siehe Abb. 2):

2896 (1uF) geändert in 6,8uF; 50V 4822 124 41578

6830 1N4148 eingefügt zwischen C/TS 7832 und Pin 28/IC 7805;

6830 1N4148 4822 130 30621

Der anstelle der Brücke 9946 eingesetzte Widerstand 1 E (siehe Punkt 2) wurde geändert in 1k (Pos. 3955)

3955 1k 4822 050 21002

CAPACITORS

2832	4822 124 41583	0,68uF	Bipolar	
2840	4822 122 10181	47pF	5%	50V
2844	4822 124 40272	33uF	20%	16V
2845	5322 121 42661	330nF	5%	63V
2846	4822 124 22028	1uF	20%	63V
2848	4822 121 43396	120nF	5%	63V
2850	4822 124 40272	33uF	20%	16V
2860	4822 124 40196	220uF	20%	16V
2863	4822 121 43868	1,5nF	5%	50V
2864	4822 121 43868	1,5nF	5%	50V
2865	4822 121 43873	27nF	5%	50V
2866	4822 121 43873	27nF	5%	50V
2871	4822 121 43872	3,3nF	5%	50V
2872	4822 121 43872	3,3nF	5%	50V
2873	4822 124 40242	1uF	20%	63V
2874	4822 124 40242	1uF	20%	63V
2896	4822 124 40242	1uF	20%	63V
2897	5322 124 22059	33uF	20%	63V
2898	4822 124 23172	470uF	20%	50V
2899	4822 124 41853	1000uF	20%	16V
2900	4822 124 40272	33uF	20%	16V
2903	4822 124 41989	470uF	20%	16V
2904	4822 124 40272	33uF	20%	16V
2906	4822 124 40272	33uF	20%	16V
2907	4822 124 40272	33uF	20%	16V
2970	4822 122 10158	1nF	10%	50V
2971	5322 124 21749	10uF	20%	63V
2972	5322 124 21643	22uF	20%	40V
2973	5322 124 21749	10uF	20%	63V

CHIP CAPACITORS

2402	4822 122 31797	22nF	10%	63V
2404	4822 122 32542	47nF	10%	63V
2405	4822 122 31797	22nF	10%	63V
2411	4822 122 32442	10nF	10%	50V
2657	4822 122 31772	47pF		
2658	4822 122 31772	47pF		
2663	4822 122 31772	47pF		
2664	4822 122 31772	47pF		
2667	4822 122 31727	470pF	5%	63V
2668	4822 122 31727	470pF	5%	63V
2669	4822 122 31727	470pF	5%	63V
2673	4822 122 31765	100pF	5%	50V
2674	4822 122 31765	100pF	5%	50V
2675	4822 122 31765	100pF	5%	50V
2676	4822 122 31765	100pF	5%	50V
2699	4822 122 31727	470pF	5%	63V
2701	5322 122 31842	330pF	5%	63V
2702	5322 122 31842	330pF	5%	63V
2703	5322 122 31842	330pF	5%	63V
2704	5322 122 31842	330pF	5%	63V
2705	4822 122 31775	680pF	5%	50V
2706	4822 122 31775	680pF	5%	50V
2707	4822 122 31808	150pF	10%	50V
2708	4822 122 31808	150pF	10%	50V
2709	4822 122 31965	220pF	5%	
2710	4822 122 31965	220pF	5%	
2719	4822 122 31765	100pF	5%	50V
2720	4822 122 31765	100pF	5%	50V
2731	4822 122 33608	39nF	10%	63V
2732	4822 122 33608	39nF	10%	63V
2735	4822 122 31727	470pF	5%	63V
2736	4822 122 31727	470pF	5%	63V
2737	4822 122 31727	470pF	5%	63V
2738	4822 122 31727	470pF	5%	63V
2739	4822 122 31727	470pF	5%	63V
2740	4822 122 31727	470pF	5%	63V
2744	4822 122 31784	4,7nF	10%	50V
2747	4822 122 31727	470pF	5%	63V
2748	4822 122 31727	470pF	5%	63V
2800	4822 122 33809	22nF	+80/-20%	
2801	5322 122 32268	470pF	10%	50V
2803	4822 122 32893	100nF	+80/-20%	
2806	4822 122 32893	100nF	+80/-20%	
2807	4822 122 33175	2,2nF	20%	50V
2809	5322 122 32531	100pF	5%	50V
2810	4822 122 33177	10nF	20%	50V
2811	5322 122 34123	1nF	10%	50V
2814	4822 122 32927	220nF	10%	63V
2816	4822 122 32575	220pF	10%	500V
2818	4822 122 33339	4,7nF	10%	50V
2820	4822 122 33496	100nF	10%	63V
2826	4822 122 33342	33nF	10%	63V
2827	4822 122 33342	33nF	10%	63V
2830	5322 122 34123	1nF	10%	50V
2831	4822 122 33496	100nF	10%	63V
2833	4822 122 32893	100nF	+80/-20%	
2834	4822 122 32893	100nF	+80/-20%	
2835	4822 122 32893	100nF	+80/-20%	
2836	4822 122 32893	100nF	+80/-20%	
2841	4822 122 33175	2,2nF	20%	50V
2842	4822 122 33809	22nF	+80/-20%	
2847	5322 122 32268	470pF	10%	50V
2849	4822 122 33809	22nF	+80/-20%	
2853	5322 122 31866	6,8nF	10%	63V
2854	5322 122 31866	6,8nF	10%	63V
2855	4822 122 33496	100nF	10%	63V
2878	4822 122 33809	22nF	+80/-20%	
2879	4822 122 33105	56nF	10%	63V

CHIP CAPACITORS								
2901	4822 122 33809	22nF	+80/-20%	2931	4822 122 33809	22nF	+80/-20%	
2930	4822 122 33809	22nF	+80/-20%	2932	4822 122 33496	100nF	10%	63V